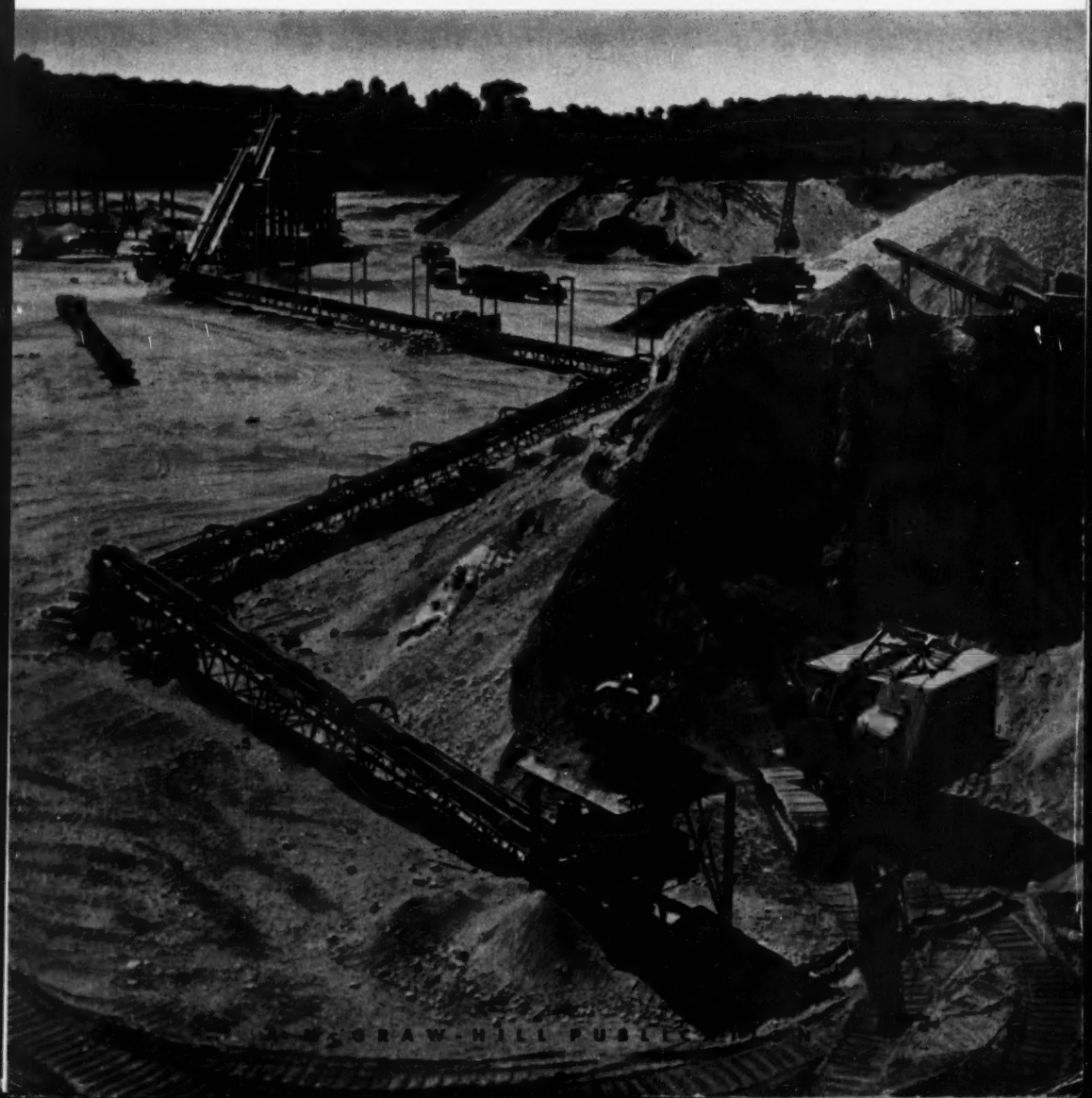
35 CENTS

CONSTRUCTION
METHODS AND EQUIPMENT

April 1952



INLAND 4®-WAY SAFETY PLATE

Safety pays off—in personnel, plant and product! You gain man-hours, lower insurance rates, greater fire protection and happier workers.

Each danger spot indicated above can be easily, quickly and economically made *safe* with slip-resistant 4-WAY SAFETY PLATE. It adds strength, traction and provides quick starts and stops.

Use 4-WAY SAFETY PLATE for sure footing on all danger spots in your plant and as standard equipment on your product.

Available from Leading Steel Jobbers

•

WRITE FOR BULLETIN F-1

INLAND STEEL COMPANY

38 SOUTH DEARBORN STREET • CHICAGO 3, ILLINOIS

INLAND

SALES OFFICES: *Chicago • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York St. Louis • St. Paul*

PRODUCTS: *Sheets, Strip, Tin Mill Products, Bars, Plates, Structural Shapes, Sheet Piling, Reinforcing Bars, Pig Iron, Rails and Track Accessories*

B.F.Goodrich

Off-the-road tires give general contractor better over-all service, more recaps

MAURICE HENDRICKSON (above) examines the tires on a low-bed trailer used for carrying 50 to 60 tons of heavy-duty equipment. As Motor Vehicle Supervisor for Hendrickson Bros., Inc., general contractors of Valley Stream, N. Y., it's his job to see that the tires on this company's excavating, grading and heavy construction equipment give good service and can take the rough treatment of off-the-road service.

"We have been using B.F.Goodrich tires for years," Mr. Hendrickson says, "and have found they give us better over-all service than other similar types of tires, better traction and a minimum of service trouble." And he adds: "We particularly like the greater number of B. F. Goodrich tires suitable for recapping."

Mr. Hendrickson's experience is typical of that of off-the-road operators throughout the country. They report B. F. Goodrich tires, built with the exclusive nylon shock shield, give excellent service and more recaps under the toughest operating conditions. The strong, elastic nylon cords under the tread rubber stretch together under impact, actually protect the tire body from smashing road shock. This means BFG tires wear longer, give you a 4-way saving:

(1) increased tire mileage (2) greater resistance to bruising (3) less danger of tread separation (4) more recappable tires.

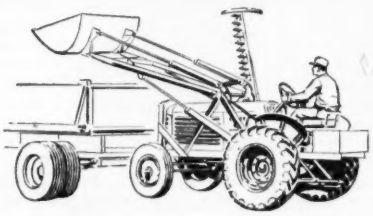
Whatever your off-the-road job, there's a BFG tire designed to do it better and save you money. Hendrickson Bros., Inc., for example, uses B. F. Goodrich Rock Logger, Universal and Highway Express tires, depending on the job to be done. See your local dealer for the full story or write *The B. F. Goodrich Co., Akron, Ohio.*

We Kept the

Don't Overlook These Cost-Cutting Combinations

A "Hydro-Cut" Mower can be quickly and easily installed in combination with:

Bulldozer



Loader

Man in Mind

IN THE IMPROVED OLIVER "HYDRO-CUT" MOWER!

Operator comfort and convenience . . . simplified maintenance . . . these were the two big things we kept in mind in the improvements we made in the Oliver "Hydro-Cut" Mower.

Actually, our performance reports showed that, from an operating standpoint, our mower was tops in its class. The outstanding Oliver features—hydraulic driven cutter bar that cuts anything from thick matted grass to moderate brush . . . hydraulic drive that assures smooth, practically vibration-free operation . . . hydraulic safety mechanism that virtually eliminates knife damage . . . finger-tip hydraulic control for instant raising or lowering of cutter bar—are retained.

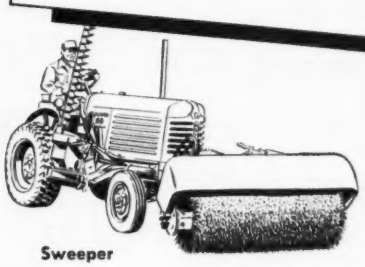
But, now, we've made life easier for the operator. There is no need for frequent oil can lubrication of the pitman. Pressure lubrication at all required moving points is provided to eliminate need for frequent lubrication. Selective and frequent tightening of the pitman bearings is eliminated.

New hydraulic tank and controls are located for maximum operator convenience. One-piece carriage casting assures more protection for the sheaves and even further dampens vibration.

For all the facts on the mower that really cuts moving costs to the bone, see your Oliver Industrial Distributor or write The Oliver Corporation, Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio
A complete line of industrial wheel and crawler tractors



Sweeper

Your choice of COLOR

IN HARD BOILED* Safety Hats

STRONGER-THAN-STEEL FIBERGLAS crowns offer unlimited choice of vivid, permanent colors... with color molded all the way thru the safest crowns ever built. Shock-resisting ribbed design also available in aircraft grade aluminum.

Write for Full Color Circular

SAVE MONEY ... save time! One size fits all heads . . . reduces inventories. Fully adjustable headband and hammock; can be changed in six seconds. Self-shaping and air-cushioned for comfort.

EVERYTHING BULLARD IN SAFETY — HARD BOILED

*T. M. Reg.

Distributors in principal cities

E. D. BULLARD COMPANY

275 EIGHTH STREET, SAN FRANCISCO, CALIFORNIA

CONSTRUCTION METHODS AND EQUIPMENT

Volume 34, Number 4 **APRIL 1952** Established 1919

Pay Dirt in This Issue

Kansas City Building Slabs Lifted by Bootstraps 50
Poured on ground, concrete roofs and mezzanine floor for 230x320-ft factory are jacked up to four levels

Breast-Board Jumbo Supports Caving Tunnel Face 57
Eighteen hydraulic rams on rig push breast boards against face to hold bad ground; four resist thrust

Bucket-Type Drills Beat Weather on Big Foundation Job 61
In 3½ wet fall months, 6,550 belled footings up to 27 ft deep are dug as fast as 72 holes per rig per day

Underwater Pipeline Is Repaired and Re-Laid 123
Sandsucker dredge uncovers broken Mississippi River crossing, then sinks it and mate deeper into bottom

Picture of the Month	44	Tank Shell Welded From Bottom	88
Construction News in Pictures	47	Earthmoving—Art and Science	93
Assist Missouri Channel Cutting	55	Shaft Muckers ARE Available	104
Lock Gates Installed Wet	64	Contractor-Labor Relations	111
Bridge Placed Between Trains	66	Legal Decisions	135
Metal Culvert Diverts Creek	73	The Maintenance Shop	142
Turner Turnpike Shapes Up	80	Construction Equipment News	172
Gantries Keep Viaduct Job Moving	85	Methods Memo; On the Cover	202

HAROLD W. RICHARDSON, *Editor*
HENRY T. PEREZ, *Senior Associate Editor*
IRA F. ANGSTADT, *Managing Editor*

Associate Editors:
New York: J. M. Connolly, *Equipment* • San Francisco: L. L. Wise • Washington: V. B. Smith

Assistant Editor: Nelle Fitzgerald, *Layout*
Assistant: Audrey Thornton • *Editorial Secretary:* Gloria Hussey

Domestic News Bureaus: Atlanta • Cleveland • Detroit • Houston • San Francisco • Washington — *Foreign News Bureaus:* London • Frankfurt • Paris Tokyo • Mexico City • Manila • Rio de Janeiro

R. F. BOGER, *Publisher*

E. E. Weyeneth, *Advertising Sales Manager;* H. T. Olsen, *Assistant Manager;* J. G. Johnson, *Business Manager. Sales Representatives:* H. T. Buchanan, 330 W. 42nd St., *New York;* F. G. Hudson, Knox Bourne and G. A. Mack, 520 N. Michigan Ave., *Chicago;* R. E. Dorland, 68 Post Street, *San Francisco;* W. C. Bradford, 1510 Hanna Bldg., *Cleveland;* W. E. Donnell, Continental Bldg., *St. Louis;* H. L. Keeler, 1111 Wilshire Blvd., *Los Angeles;* R. C. Maultsby, 1321 Rhodes-Haverty Bldg., *Atlanta;* James Cash, First National Bank Bldg., *Dallas. Other Sales Offices:* Architects Bldg., 17th and Sansom Sts., *Philadelphia;* 738 Oliver Bldg., *Pittsburgh;* 856 Penobscot Bldg., *Detroit;* 1427 Statler Bldg., *Boston;* Aldwych House, *London.*

APRIL 1952 **CONSTRUCTION METHODS AND EQUIPMENT** Vol. 34—No. 4
Member ABC and ABP

Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) Founder. **Publication office, 330 W. 42nd St., New York 36, N. Y.**

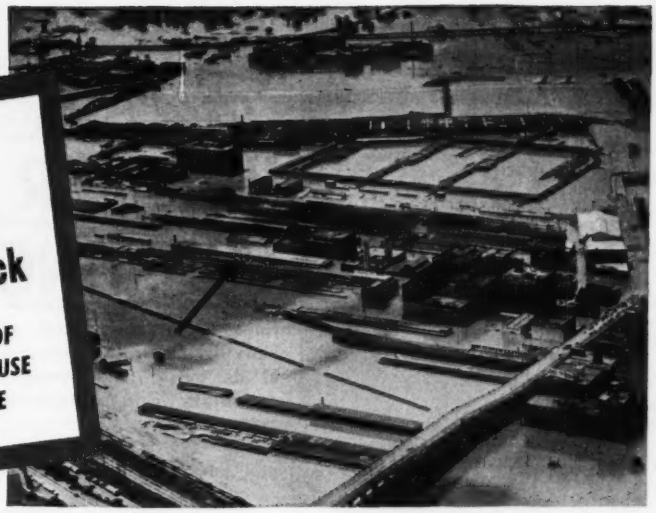
Executive, Editorial and Advertising offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Construction Methods and Equipment—Subscription Service, 330 W. 42nd St., New York 36, N. Y. Allow ten days for change of address. Subscriptions are solicited only from persons engaged in construction or in supplying the construction industry. Position and company connection must be indicated on subscription orders.

Single copies 35¢. Subscription rates—United States and possessions $2.00 a year; $3.00 for two years; $4.00 for three years. Canada $4.00 a year; $6.00 for two years; $8.00 for three years. Other Western Hemisphere $10.00 a year; $16.00 for two years; $20.00 for three years. All other countries $15.00 a year; $25.00 for two years; $30.00 for three years. Re-entered as second-class matter July 14,1949, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U.S.A. Copyright 1952 by McGraw-Hill Publishing Co., Inc. —All Rights Reserved

Greater Kansas City's Valiant Come-Back

SPEEDY REBUILDING OF SANTA FE FREIGHT HOUSE A TYPICAL EXAMPLE



Faster Thorough Curing with 'Incor' 24-Hour Cement Assures Utmost in Heavy Duty Floor Service

● An idea of the driving energy behind the great comeback of Greater Kansas City, after last July's catastrophic flood, is conveyed by all-out speed in rebuilding the Santa Fe Freight House (arrow in photo, above) in the Central Industrial District.

As soon as flood waters receded, tons of debris were cleared out, new fill brought in, and the structure rebuilt, with a heavy-duty 'Incor' concrete floor replacing the old wooden floor.

Concreted two bays at a time, 'Incor' concrete was in use the day after placing, saving vital time. The Freight House, with its strong, durable, new floors, 3700 ft. total length, was back in full service ten days after the water receded!

By curing thoroughly in the short time concrete can be kept wet on most jobs, 'INCOR'* 24-Hour Cement assures the utmost in heavy-duty service . . . lowest annual cost for many years' hardest use. *Reg. U. S. Pat. Off.

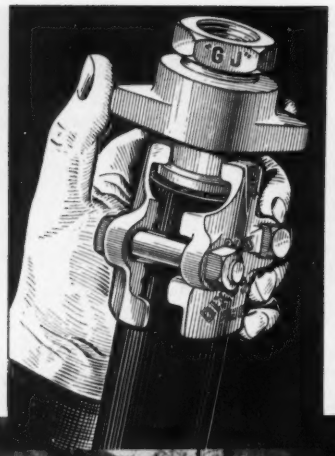
THE ATCHISON, TOPEKA & SANTA FE RAILWAY SYSTEM
Freight House, Kansas City, Mo.
General Contractor: **UNIVERSAL CONSTRUCTION COMPANY**
Concrete Floor Contractor: **JOHN ROHRER CONTRACTING COMPANY**
Ready-Mix 'Incor' Concrete: **READY-MIXED CONCRETE COMPANY**
all of Kansas City, Missouri

LONE STAR CEMEKTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. • BIRMINGHAM
BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK
PHILADELPHIA • RICHMOND • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS 125,600,000 SACKS ANNUAL CAPACITY



This AIR HAMMER COUPLING

rates *first* among users of heavy-duty air hose because of its outstanding strength, durability and efficiency.

"GJ-BOSS" *Ground Joint Air Hammer Coupling*

Washerless construction, with soft-to-hard metal union between stem and spud forming leakproof seal. All parts steel or malleable iron, in plain design, providing highest resistance to wear and breakage. Furnished with strong "Boss" Interlocking Clamps. Compact and heavy types, in sizes ½", ¾" and 1". Rustproofed.

Stocked by Manufacturers and Distributors of Industrial Rubber Products.

DIXON *Valve & Coupling Co.*

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA. BRANCHES—CHICAGO BIRMINGHAM • LOS ANGELES • HOUSTON • DIXON VALVE & COUPLING CO. LTD. TORONTO

ASSOCIATE COMPANIES: SUCK IRON COMPANY, INC., QUAKERTOWN, PA. • PRECISION DRAWN STEEL COMPANY, CAMDEN, N.J.

★ JOB TALK ★

Manufacturer Publications

Adjustable Steel Shores

Six step-by-step pictures in the center fold of this booklet show proper methods of erecting primary shores, intermediates, joists, ties and decking for concrete forming. The shores are adjustable, with screw threads pitched 4 to the inch; each revolution of the jacking arm raises the telescoping section exactly ¼ in.

An extension on the underside of the adjustment nut cleans concrete, grit and dirt from threads of the tube as changes in shore height are made. Four types range from 5 ft 8 in. to 15 ft in height and carry working loads of 2,050 to 8,210 lb.—**Acrow, Inc., 510 N. Dearborn St., Chicago 10, Ill.**

Sling Handbook

Anyone concerned with the slinging of loads will be pleased with the 48-p Sling Handbook and Riggers' Manual describing Tuffy ropes. Dimensions, loads, eye sizes, tuck lengths and all the rest of the data needed are included for 12 different sling types. Thirty illustrations help with choosing of the right sling for the job. Visual aids take up 24 of the 48 pages with instructions on seven different kinds of splices, attachment of ferrules, thimble clamps and sockets.—**Union Wire Rope Corp., 2100 Manchester Ave., Kansas City 3, Mo.**

Blasting Techniques

Milli-second delay blasting by eight different methods is the content of a 20-p manual by Atlas Powder Co. It is helpful to anyone interested in quarry blasting, coal stripping, open-pit shooting or aggregate production for construction projects. Progressive and alternate milli-second delay techniques are illustrated with diagrams of detonation patterns.—**Atlas Powder Co., Wilmington, Del.**

Hydraulic Truck Hoists

Four types of hydraulic hoists and two types of truck bodies are described in a 6-p folder by Perfection. A large, clear-cut photo of the lift mechanism shows the featured Iso-Draulic Roll-A-Lift. A hydraulic cylinder, pivoted on huge trunnion bearings actuates two graduated track arms which pivot on a heavy cross shaft.

Pressure rollers are mounted on both longitudinals under the body. These

(Continued on page 10)

HIGH LIFTS made Easy!

A *good* crane is *good* on *every* crane job! It's more than just a boom—or a feature—a clutch or a hoisting mechanism. It's a combination of a basic machine with its multiplicity of advantages—a combination of design, materials, balance, engineering—all the tangible and intangible qualities that result from years of experience.

Northwest brings you a choice of boom hoist equipment for any condition. Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and makes spotting the load easy (important with high booms). Northwest steering is smoother, assures easier maneuvering with the load when booming high. The "Feather-Touch" Clutch Control gives the "feel of the load" and makes operation smoother and easier without resorting to complicated mechanisms. When required, engine throttle control is available for operations requiring variable speed.

These are just the high spots for making the high lifts easier. Just a few of the reasons why one out of every three Northwests sold is a repeat order. You can plan on a Northwest! Why not talk over placing an order. Get the full story.

NORTHWEST ENGINEERING CO.
1508 Field Building,
135 South LaSalle Street,
Chicago 3, Ill.

You can't have all these advantages unless you own a NORTHWEST!

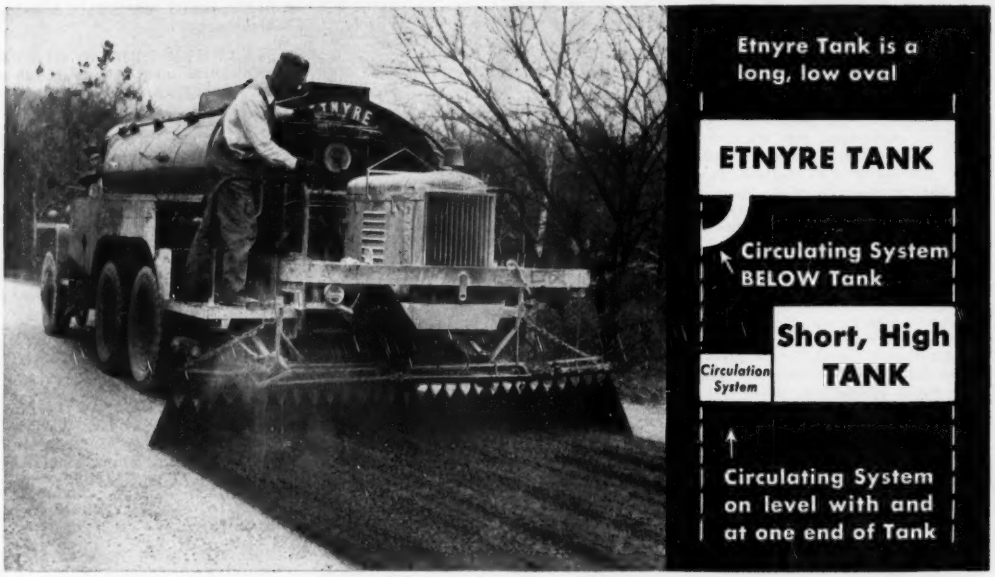
- SIMPLICITY OF DESIGN assures easier upkeep.
- "FEATHER-TOUCH" CLUTCH CONTROL gives easy operation and retains the *feel of the load* without delicate or complicated mechanism.
- UNIFORM PRESSURE SWING CLUTCHES give smoother engagement, better control, less adjustment and longer life.
- NORTHWEST POSITIVE TRACTION while turning, as well as when going straight ahead, permits Northwests to travel where others have difficulty. Travel gears are fully enclosed and run in oil.
- BALL AND ROLLER BEARINGS on all high-speed shafts always have been standard equipment on Northwests.
- CAST STEEL BASES WITH CAST STEEL MACHINERY SIDE FRAMES are typical of Northwest design for permanence of shaft alignment and rigidity.
- CUSHION CLUTCH eliminates the effects of shock overloads to parts under power.
- ALL NORTHWESTS are easily convertible from Shovel to Crane, Dragline or Pullshovel.

WEIGH ALL THE ADVANTAGES

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

WHY YOU GET *IMPROVED* HEATING, *BETTER* ROADABILITY, *EQUALIZED* LOAD DISTRIBUTION


ETNYRE
Etnyre Tank is a long, low oval
ETNYRE TANK
Circulating System BELOW Tank
Short, High TANK
Circulation System
Circulating System on level with and at one end of Tank

Get the Facts! Here is an exclusive Etnyre feature of interest to every owner and operator of a bituminous distributor. It's the secret of Etnyre's success in building the finest spraying mechanism known today.

On a Tank of any capacity, on any given cab to axle, Etnyre uses a longer Tank with a lower center of gravity. This is possible because the Etnyre Circulating System is located BELOW the Tank. The results are:

Improved heating... more flue area per gallon of material—longer Tank allows for smaller oval, longer flues—less distance for heated material to travel from flues throughout load. Stack temperature reduced because of faster dissipation of heat through material.

You get *better* roadability—the lower center of gravity makes possible faster, safer traveling speeds to and from the job—also improved appearance.

You get *equalized* load distribution—which saves on chassis and tires, makes for easier handling, adds years to the life of your truck.

This is just *one* of dozens of exclusive Etnyre advantages. For the complete story, phone your nearby Etnyre Dealer or get in touch with us today!

E. D. ETNYRE & CO., Oregon, Ill.

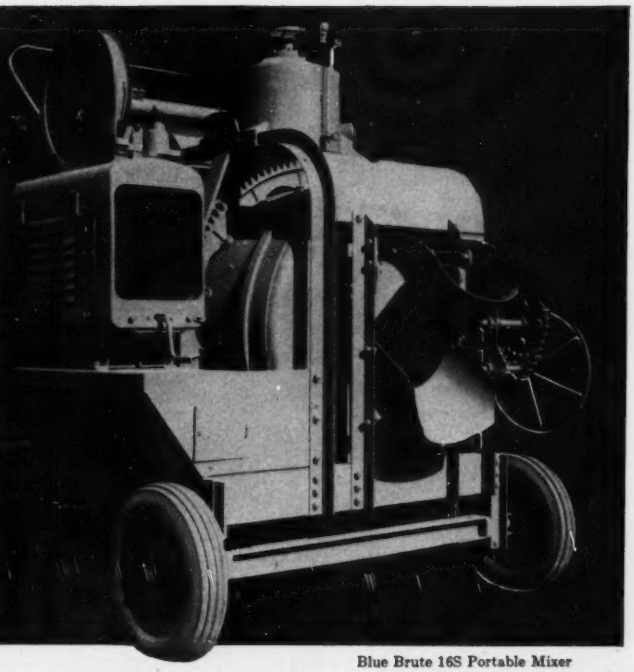
SEE YOUR ETNYRE DEALER

ETNYRE

"Black-Topper"

BITUMINOUS DISTRIBUTORS

How much performance can a portable mixer give?



Blue Brute 16S Portable Mixer

. . . Unless you're a Blue Brute user, it's probably more than you think!

Idle boast? Ask any one of the thousands of mixer owners who have standardized on Worthington what they think!

. . . Ask about the *famous Worthington mixing action* that results from complete turning of the concrete three times in each revolution of the drum.

. . . And the *water system*—an exclusive spiral cut-off syphon type with no rubber to deteriorate.

. . . And the *drum-drive gear* of one-piece semi-steel, machined inside to a true circle.

. . . And the *skip cable winding shaft* mounted in self-aligning bearings with grooved spools for longer cable life.

. . . And the *automatic clutch knockout and brake* that hold skip in discharge position when power loader is raised to top.

. . . And the *self-cleaning skip vibrator* that speeds discharge.

. . . And the *water-cooled engine* with the radiator that faces the discharge side—or about the *air-cooled* model also available.

. . . And about the *solid welded roller sub frame* that assures correct alignment of rollers.

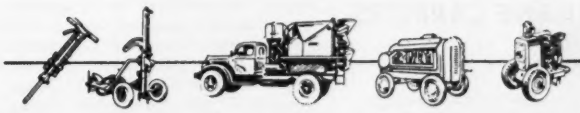
. . . And the *two-piece discharge chute* that's out of the way during mixing.

Whether you choose the 16S—the big four wheel job—or the smaller two or four wheel 11S, you'll be taking the best step you can towards boosting output and lowering operating costs. Remember, Worthington has designed and built mixers for nearly a century.

Worthington Corporation, formerly Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, New Jersey.

ON THE JOB, BLUE BRUTE PORTABLE MIXERS give you top quality concrete *where* you want it, *when* you want it. They make it easy for you to accurately schedule pours in advance. Above mixer is 11S.

R.2.1



If It's A Construction Job, It's A *Blue Brute* Job

WORTHINGTON

Construction Equipment

ANOTHER

MAXI-MOUNTED CLAMSHELL★

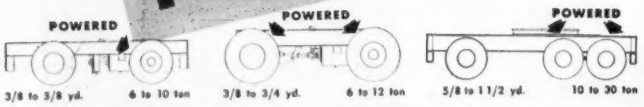
. . FOR THESE MAXIMUM ADVANTAGES:

- one-man control
- operation stability through 360°
- close quarter maneuverability
- fast travel—either direction

★ Link Belt Speeder MS-70 Zephyr-crane, owned by Chicago Transit Authority, removing old track fill. Low boom operation caused by the low trolley wires calls for maximum crane carrier stability.

Write for additional information.

MAXI® CRANE CARRIERS



ENGINEERED AND MANUFACTURED BY SIX WHEELS, INC. • LOS ANGELES 54, CALIF.

JOB TALK . . . Cont. from p. 6

engage the arms and travel along their upper surfaces as the body rises, assuring greatest mechanical advantage at the start where the lift is heaviest, then maintaining this MA so that cylinder oil pressure remains constant right up to the dumping point, when it decreases sharply.—**The Perfection Steel Body Co., Galion, Ohio.**

Masonite Form Liner

Complete specifications for the use of Masonite Concrete Form Presdwood are contained in the center spread of an 8-p brochure which explains what it is, where to use it and why. Included is an interesting chart that shows at a glance the deflection and span of ¼-in. thick Presdwood in concrete forms.—**Masonite Corp., 111 W. Washington St., Chicago 2, Ill.**

Data on Water Systems

Here is a 135-p bound catalog designed on the one hand to assist engineers by giving information on M&H products. Further, it supplies related miscellaneous data useful in design and construction of water distribution systems, filter plants, sewage treatment plants and pumping stations.—**M&H Valve & Fittings Co., Anniston, Ala.**

Modular Standard Units

The American Standards Assn. and American Institute of Architects have developed a coordinating basis for dimensions of building materials. Besser Mfg. Co. applies these recommendations and applies them to all its building units. A 28-p colored booklet illustrates how all block dimensions end in ⅝ in. For example, a block 7⅝ x7⅝x15⅝, when buttered with a ⅜-in. mortar joint, becomes a standard 8x8x16.

The booklet shows details of bull nose, beam lintel, coping and jamb blocks—as well as soffit block for floors, drain tile, chimney and pilaster blocks, and flat, solid slabs for walks and terraces. Corner details and wall patterns are included.—**Besser Mfg. Co., Alpena, Mich.**

Pneumatic Ejectors

In handling sewage and industrial wastes, the gallonage to be pumped determines the equipment to be used. As gallonage scales down, a point is reached where good engineering dictates a switch from a centrifugal sewage pump to the pneumatic ejector. Solids-carrying liquids often overtax centrifugal pumps and clog impellers.

This company manufactures both

(Continued on page 20)

4 TERRA COBRAS
move 840,000 yds in 120 days
for Wright Contracting Co.

"TERRA COBRA IS A PRODUCTIVE TOOL HARD TO EQUAL" *says W. D. Kirk,*
Vice President and Project Manager for Wright Contracting Co. of Columbus, Georgia. After completion of the record job, Kirk gave particular credit to the rugged Cobras for "fast loading quality, toughness, ease of operation, accessibility to repair."

Completion on schedule of the Washington-Baltimore Thruway was a "must" in National Defense planning. The original 180 calendar days allowed by the contract to move 1,020,000 cu. yds. meant fast work, even for an experienced top Southern dirtmover like Wright Contracting Co. But to make it tougher, heavy rains cut actual working days to 120. Wright checked the field carefully—picked four Wooldridge Terra Cobras to carry the major load. Their own job records justified their choice. The steady, dependable Terra Cobras came through with a tireless 20 hours per day, six and seven days per week. Each worked over 2300 hours (normally almost two seasons' work). These four job-proved Cobras moved 840,000 solid pay yards of "orange peeling" hard clay on average one-way hauls of 2900 feet over tricky hard-to-maintain roads. Their average —91 yards per machine per operating hour! This unexcelled record was set in spite of manpower and material shortages. Let Terra Cobras give you this same profit-proved performance—so important in these times when machine efficiency means more than ever before.

WOOLDRIDGE MANUFACTURING COMPANY
Sunnyvale, California • 5345 N. Winthrop Ave., Chicago 40, Illinois

WOOLDRIDGE

BUILT FOR MORE PRODUCTION PER HOUR—MORE HOURS OF PRODUCTION

Terra Cobra

Terra Cobra Wagon

Power Control Unit

Scrapers

Rippers

Bulldozers

"Let the shovel go . . . but hang on to that DIPPER"

When the preference for an Amsco Dipper is so strong that a superintendent at one of Minnesota's largest iron mines quietly removes it from a shovel being shipped to another mine, there are apt to be some good performance reasons why!

The superintendent reported that this AMSCO 6½ yard renewable lip dipper *loaded a record number of tons per 8 hour shift*—more than had ever been loaded before. And, where other dippers needed repairs every 2 months or so, it is still going strong after 6 months of service with no repairs of any kind!

Better design and construction are the reasons for this high production and longer, uninterrupted service. The wide mouth and shallow depth permit faster, easier digging and loading, and a 4-way taper insures clean dumping every time.

And, this dipper is *all-cast*—of tough, work-hardening AMSCO Manganese Steel. The renewable lip and heel plate, when finally worn, are replaceable in a matter of minutes.

Dippers can—and should be—bought with an eye to higher digging efficiency and lower costs per ton . . . and the moral of this actual on-the-job example is clear . . .

WHEREVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

. . . find out about longer-lasting, dollar-saving Manganese Steel Dippers made by AMSCO . . . world's largest producer of manganese steel castings for all industry.

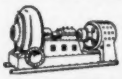
AMSCO controls impact and abrasive wear in 5 basic industrial operations:

Power Transmission

Mining and Excavating

Transportation

Crushing and Pulverizing



Materials Handling

Brake Shoe AMERICAN MANGANESE STEEL DIVISION

385 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

GREATEST

PORTABLE SCREEDING MACHINES EVER BUILT!

New Whiteman Models offer many big improvements!

NEW POWER!
Larger Wisconsin and B & S Engines.

NEW ADJUSTABLE FRAME.
Fits any width form.

NEW VERSATILITY.
Adaptable for overhead screeding.

NEW WEIGHT DISTRIBUTION. Eliminates sag in screed sticks.

NOW!
Adaptable to Any Job!

Telescopic frame adjusts from 3' to 15' in width.

Never before has a screeding machine offered the superb performance, extreme versatility and rugged dependability of the new Whiteman Models R5-11 and 52-15. The perfect answer to screeding problems on slab floors, driveways, walks, narrow, winding roads, shoulders, bridges, approaches, tributary roads, limited and inaccessible areas. These machines puddle and vibrate the concrete throughout the entire depth and area, thoroughly compact the slab, bring moisture to the surface and screed the slab to a perfect level preparatory to floating and finishing. Heavier aggregates do not settle to the bottom, but remain in suspension, resulting in a superior, far more durable slab. Results are equal to those of larger equipment. APPROVED BY MANY HIGHWAY ENGINEERS. Send coupon now for prices and literature.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. C
3249 Casitas Ave., Los Angeles 39, Calif.
Please send prices, literature and name of distributor for ☐ Screeding Machines, ☐ Power Buggy ☐ Floating Finishing Machines.

Name_____

Firm_____

Address_____

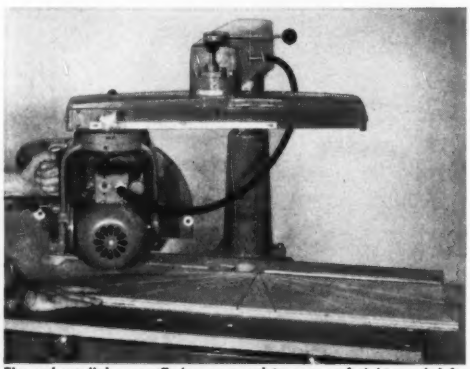
City_____ Zone____ State____

It's NEW—in versatile performance—
—the revolutionary DELTA

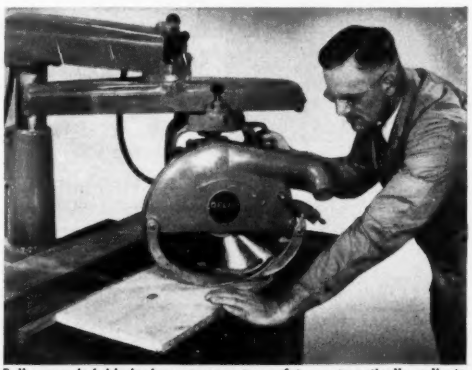
Think of all the outstanding practical performance, maintenance, and safety features that the "Perfect Saw" must have—and you'll find them in the new heavy duty DELTA 16″ Radial Saw. Delta engineers designed this extraordinary machine with that very goal in mind—to develop a radial saw as near perfection as long experience, painstaking engineering and superlative workmanship can produce.

Compare this great new saw point for point, detail by detail, with other saws. Take it apart in your mind—to see how it functions, and *why it offers you more in operating efficiency, capacity, safety and durability.*

Then make it a point to see this saw at your Delta dealer. Have him demonstrate it—and operate it yourself. You'll realize that here, at last, is the "perfect radial saw."

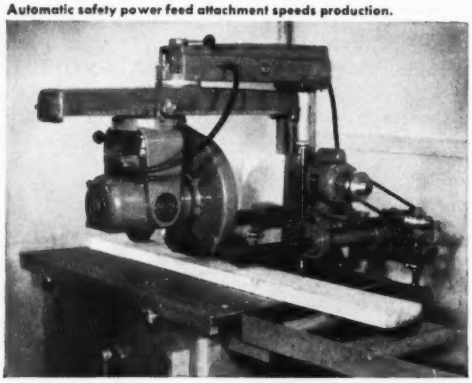


The only radial saw offering a complete range of right- and left-hand miter cutting—*with safe, normal pull action.*



Fully guarded blade insures operator safety, automatically adjusts itself to thickness of material being cut.

Automatic safety power feed attachment speeds production.



Big capacity . . . saw will cross-cut 25″ wide on 1″ stock, 22″ wide on 5″ stock . . . will rip to center of 77″ wide panel.

in safety features–in economy of operation

16" RADIAL SAW

These 8 "PERFECT SAW" Features *exclusive* to the New Delta Saw, mean big savings and years of satisfaction

1. **Only Saw With All Controls In Front**—safer, easier to operate because every lock, lever, crank and calibrated scale is "up front."
2. **16" Saw Blade Cut 5⅛" Deep**—unmatched capacity, more than any other 16" radial saw blade—blade not only cuts deeper but lasts longer.
3. **One-Piece Aluminum Safety Guard**—covers the entire saw spindle for added safety—can be fitted to enclose blade completely.
4. **Front 360° Miter Pivot**—permits saw arm to rotate 360° above the work table; swings either way, right or left, to cut miters from 0 to 90° with normal "pull saw" action.
5. **Enclosed Lifetime Trackways**—glass-smooth, hardened surfaces minimize roller friction; carriage travels more easily, rolls much faster with less effort.
6. **Sensational New "Lo-Rise" Motor**—powerful direct drive, totally fan-cooled motor furnished in 3, 5, and 7½ HP.
7. **Quick-Set Stops at 30°, 45°, 60° and 90°**—takes but a few seconds to set saw at these commonly used bevel and miter positions.
8. **Front Guide Fence Controls**—offer quick, positive locking action when changing guide fence positions; no more hammering of wedges.

Your Delta dealer is listed in your Classified Phone Book, under "Tools" ...ask him to show you this remarkable radial saw development.

DELTA POWER TOOLS

Another Rockwell Product

There's a Delta Power Tool for Your Job-

WOOD OR METAL WORKING

53 MACHINES • 246 MODELS • MORE THAN 1300 ACCESSORIES

MILWAUKEE DELTA POWER TOOL DIVISION

Rockwell MANUFACTURING COMPANY

649D East Vienna Avenue • Milwaukee 1, Wisconsin

☐ Please send me complete specifications on this new 16" radial saw.
☐ Please send me the name of the nearest Delta Dealer

Name_____

Position_____

Company_____

Address_____

City_____ Zone____ State_____

up to 25% more production

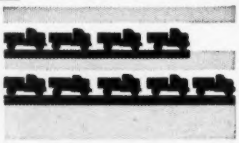
with *Speed-o-Matic* controls

WESTERN NEW YORK GRAVEL AND CONCRETE CORP., Batavia, N. Y., uses a Link-Belt Speeder LS-52 dragline to move hundreds of yards a day out of this gravel pit. Full-hydraulic controls reduce time lags and operator fatigue—steps-up production as much as 25%.

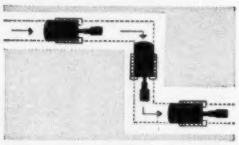
Here are Link-Belt Speeder PLUS FEATURES that work for you

Speed-o-Matic Controls — fully hydraulic! You "feel" the load all the way. Simple, easy—fingers instead of muscles do work.

Eliminates up to 150 parts — cuts friction, no worn bushings, pins, links or clutch toggles to put you "down."

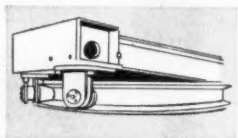


Up to 25% more production — fast operating cycle steps up output and profits. Effortless control keeps operator fatigue down.

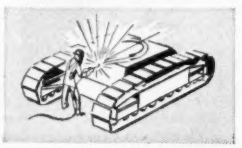


Turns on a Dime. Either track can drive or be locked independently. Hydraulic control gives instant response.

Convertibility — designed for peak production as shovel, crane, dragline or trench hoe. Convert in field—quickly, easily.



Hook Rollers — Cone-shaped for *true* rolling. Reduce roller and roller path loads—eliminate center pin pull.



All-Welded Stress-Relieved Construction — extra strength without extra weight. Resists impact, twist. Field service simple.

Full Revolving Fairlead—mounted in anti-friction bearings—gives perfect cable lead. Large sheaves assure long cable life.

LINK-BELT SPEEDER

CORPORATION

12,021

Builders of the most complete line of shovels, cranes and draglines

CEDAR RAPIDS, IOWA

GOING'S ROCKY

...but it just keeps 'dozin' along!

You can see what conditions were like on this road-building job near Henrieville, Utah. The altitude's 7,000 feet. In 2½ miles, about 160,000 cu. yds. 85% rock had to be moved. To move it, Whiting & Haymond relied heavily on "Caterpillar" units—among them, this D8 Tractor with No. 8U Bulldozer. Supt. A. H. Cranmer said: "'Cat' Diesel Tractors are tops for work of this nature. With the amount of rock we had here, they stood up to it all day long and it never hurt them. Our 'Caterpillar' Dealer took care of us in grand shape."

Mr. Cranmer makes two good points. First, "Caterpillar" units stand up under tough going. Second, you get good service from your "Caterpillar" Dealer. However, it's just common sense not to wait until the last minute to call on him. Have him rebuild parts *before* wear damages them beyond repair. And see that your rigs get proper maintenance attention on the job. That takes only a few minutes a day, but it's an important factor in adding many *extra* working hours to the life of your sturdy "Caterpillar" equipment.

CATERPILLAR TRACTOR CO. • Peoria, Illinois

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

KEEPS EQUIPMENT ON

SIMPLIFIED LUBRICATION

Follow the Texaco Simplified Lubrication Plan and you can handle *all* your major lubrication *with only six Texaco lubricants.* A Texaco Lubrication Engineer will gladly explain its many advantages. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

TEXACO

TEXACO

THE JOB–KEEPS JOBS AHEAD OF SCHEDULE

. . . that's why Brown Contracting Company prefers TEXACO MARFAK

FOR the past ten years, Brown Contracting Company, Albuquerque, N. M., has made *Texaco Marfak* its first choice for chassis lubrication Reasons: "*Texaco Marfak* stays in the bearings, gives longer lasting protection against wear and rust even under the toughest conditions, and definitely increases parts life. We have less downtime on our equipment, and our maintenance costs are lower."

For the same reasons, contractors everywhere prefer *Texaco Marfak*. That's why: MORE THAN 400 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD.

For wheel bearing lubrication, use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture, seals itself in. Assures safer braking because it won't leak onto drums. You can count on longer bearing life, lower maintenance costs. No seasonal change required.

Reduce Other Maintenance Costs

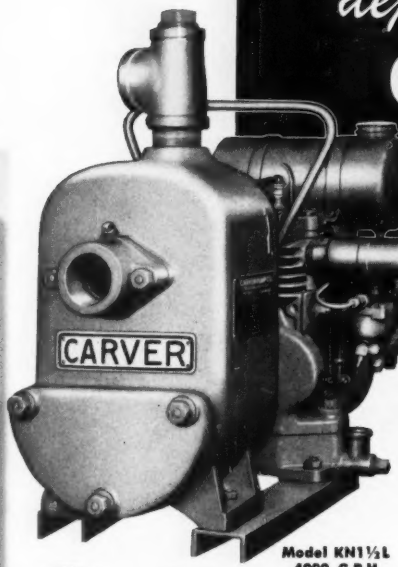
In engines – heavy-duty gasoline or Diesel – use *Texaco Ursa Oil X***. It's fully detergent and dispersive, keeps engines clean for low maintenance costs and fuel consumption.

In crawler track mechanisms, use *Texaco Track Roll Lubricant*. It seals out dirt and moisture, protects bearings against wear and rust.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

Faithfully yours 50 *for Fifty Years*

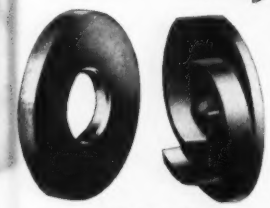
for the . . . Complete
QUALITY LINE
depend on
CARVER
PUMPS



Model KN1½L
4000 G.P.H.

A COMPLETE LINE

Carver Self-Priming Pumps available in all sizes from 4,000 to 240,000 G.P.H. Gas, Diesel, Motor or Belt Drive. Also Diaphragm Pumps up to 6,000 G.P.H. Ask for Bulletin No. 110. Carver Pump Co., 1402 Hershey Ave., Muscatine, Iowa.



REPLACEABLE LINERS AND IMPELLERS

Sturdy, wear-resistant replaceable liners and impellers are standard equipment in all Carver Contractor Pumps. When wear eventually occurs you don't replace the entire costly casing, as in ordinary pumps. Simply remove and install a new liner, a new impeller if necessary, and new pump efficiency is restored at nominal cost.

Another Carver Quality Feature!

A QUALITY LINE

Quality is our strong forte — Every Carver Contractor Pump is designed and manufactured with one specific purpose in mind — to provide you with rugged dependable equipment, loaded with reserve power and stamina, to handle the toughest construction jobs. Nothing fragile about these pumps; no skimping on materials; no underpowering; no compromise of quality. Throughout their many years Carver pumps have earned an enviable reputation in the field for dependable, efficient and long-life service. We shall continue to build pumps that will perpetuate this reputation.

Specify Carver Contractor Pumps — your best buy for better performance.

CARVER PUMPS

JOB TALK . . . Cont. from p. 10

types and can advise on problems encountered in handling crude sewage, sludge and industrial wastes. Installation of a Shone ejector is particularly appropriate where compressed air is available. Bulletin 4000-C describes simple operation, different type ejectors available, tankless and storage types and typical specifications.—**Yoemans Brothers Co., 1433 N. Dayton St., Chicago 22, Ill.**

Surveying Instruments and Accessories

Bulletin No. 1052 of the David White Co. is a 42-pager showing, with pictures and descriptions, a complete line of engineers', Surveyors' and builders' instruments and accessories. An interesting center insert is titled "The Advantages of Coated Lenses" and shows in three colors the difference in light passage through coated and uncoated types. —**David White Co., 315 W. Court St., Milwaukee 12, Wis.**

Airport Paving Forms

The new Blaw-Knox paving form is a self-aligning, heavy-duty model, designed specifically for airport paving. Bulletin 2370 describes it fully. It explains the need for paving forms in excess of 12 in. to handle thicker slabs necessitated by concentrated wheel loads of heavy bombers and air transports. It contains detailed construction features, including lock-joint connecting slide plates.—**Blaw-Knox Div., Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 22, Pa.**

Alidades

To aid engineers in the field in the use and adjustment of alidades, a 28-p pocket-size booklet has been published by the Gurley Co. Known as booklet C, the first half has information for use of the alidade in map-making and exploration, as well as detailed instructions on stadia surveying and use of the Beaman Stadia Arc. The second half deals with instrument adjustments, parallax, striding level, collimation, control level, compass needle, finder sights and related helps.—**W. & L. E. Gurley Co., Troy, N. Y.**

Arc Welding Accessories

Three 2-color bulletins by G. E. are available. They describe: protective clothing (GEC-867); helmets and glass (GEC-865); and brushes, carriers, chipping hammers, weld gages, paint and weld-spatter compounds (GEC-866). In addition to illustrations and descriptions, the bulletins list specs, type and catalog numbers for each item.—**General Electric Co., Schenectady, N. Y.**

NEED A CRANE ON RUBBER?

LORAIN BUILDS THE MOST COMPLETE LINE

FROM 10 TO 45 TONS

WORLD'S LARGEST RUBBER-TIRE CRANE

Here it is — the largest crane on rubber in the world — the Lorain MC-824 Moto-Crane. This is one of two working for Ebasco Service Corp., Joppa, Illinois. A number of these giant cranes have been proven in all types of service — all over the country.

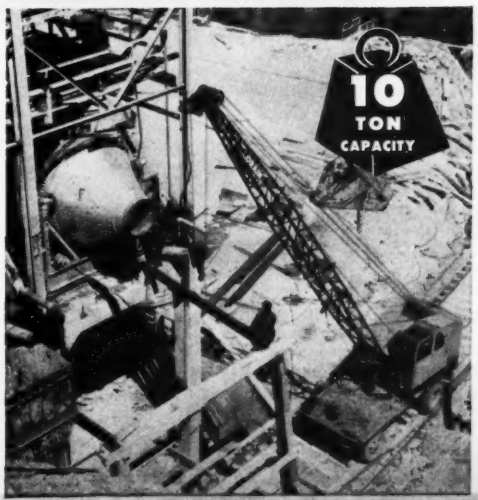
When your job calls for rubber-tire mobility in a crane, make your selection from the world's most complete line . . . LORAIN! You'll have more sizes, types of mountings and drive arrangements to fit your needs — no matter what they may be.

NEED CAPACITY? How big — or small — or in between? Lorain Crane capacities on rubber range from the versatile 10-ton Self-Propelled SP152 up to the world's largest crane on rubber — the mighty 45-ton MC824 Moto-Crane shown above.

NEED POWER & DRIVE? Select from 2 or 3 axle types with 4 or 6-wheel drive for plenty of tractive effort — plus big, multiple tires for soft ground flotation. There's a type to match your needs.

NEED 1 OR 2 ENGINES? 30 m.p.h. Moto-Cranes with 2 engines are especially Lorain engineered and built to match crane capacities. Single-engine, Self-Propelled machines (7 m.p.h.) round out the biggest rubber-tire crane selection in the field! Remember, Thew built the first crane on rubber tires and is still the leader in this field. *If you need a rubber-tire Crane . . . be sure to check with your Thew-Lorain Distributor to be sure of the best!*

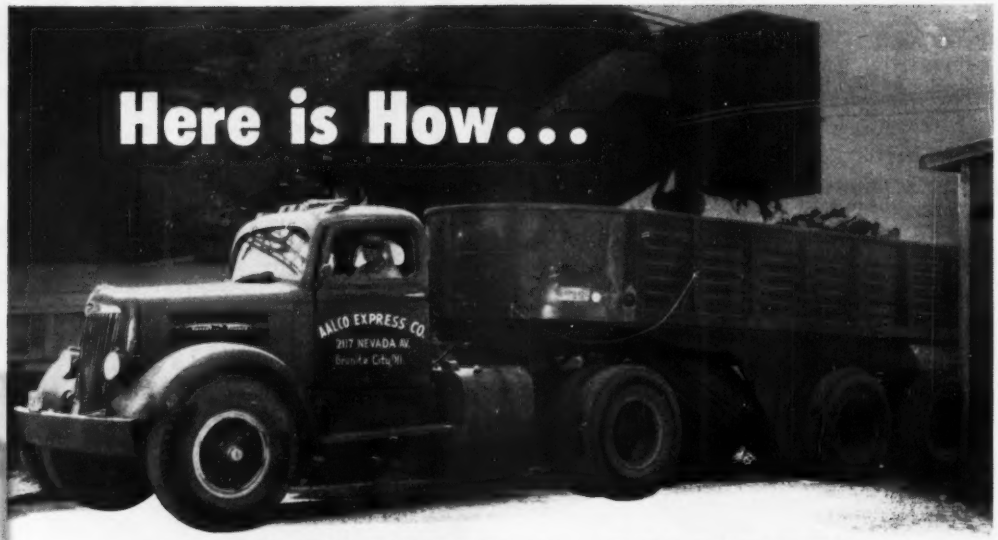
THE THEW SHOVEL CO., LORAIN, OHIO



LORAIN BUILDS CRANES FOR THE SMALL JOBS, TOO!

Here's the "baby" of the Lorain Rubber-Tire Crane family. This 10-ton Self-Propelled Crane, Model SP152, erects a concrete plant for dam construction. Big lifts or little, there's a Lorain on rubber to fit the job.

THEW LORAIN



WHITE EXTRA QUALITY

Really Pays Off!

WATCH THE WHITES in action on the extra-rugged jobs for real proof of performance.

Look at the job they're doing for Aalco Express Co., St. Louis, helping to build the new Chain of Rocks canal in the Mississippi river.

Whites are hauling bigger loads . . . cutting schedule time . . . making the grades without lugging . . . because they are engineered to the work they are doing.

Here – One of the Whites starts its climb up the sand dune over a newly laid road of loose slag. Hauling 30,000 pounds of slag. Much of grade 30° and more.

Here – Expert touch needed here, lining up vehicle for run down ramp with full load. Uncertain footing and lots of strain but White handles well . . . keeps coming back for more.

Here – Now the climb off the uneven ramp, on to loose shale. Really rough here. Some trucks started sliding and ended in canal. Others couldn't make steep grade. "Whites ideal for this operation," reports Charles Peters, president of Aalco. Performance proves it.

THE WHITE MOTOR COMPANY • *Cleveland 1, Ohio*

White

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

LOOK JOE!...

It's Done Easier, Faster, More Economical When You SAW Before BREAKING with a Clipper® CONCRETE SAW

● For cutting Streets, Sidewalks, Building Floors, Airport Runways, CLIPPER is the fastest, most efficient Concrete Saw ever designed. Score precision-straight, smooth edges 1/4 to 1/3 the depth, then break for patches, trenches.

● SAVE TIME
● SAVE MATERIAL
● NO ROUGH EDGES

Experience Proves A Concrete Saw Must Have These Clipper Features

1. Clipper "No Bind" Floating Three Point Suspension Automatically protects blade.

2. Positive Screw Feed Instant control raises or lowers blade smooth, easy.

3. Adjustable Depth Lock Set this handy stop for whatever depth desired.

4. Patented Spray Control Its value is measured in increased Blade Life.

NOW YOU CAN SAW ANYTHING

PATCH
Saw clean straight lines, break smooth — Size and shape make no difference

TRENCH
Gas, Water, Sewer, Electric, Telephone, new installations or old ones repaired

CONTRACTION JOINTS
Highways, Streets, or Building Floors precision cuts eliminate hand tooling

DRIVES—WALKS
Prove the job can be small and still make concrete sawing profitable

GENUINE CLIPPER DIAMOND BLADES

Regardless of the Material you plan to Cut... Limestone, Flint, Gravel Aggregate Concrete Green or Well Cured, or Asphalt... there's a Clipper Diamond Blade to cut fast and economically.

SOLD ONLY DIRECT FROM CLIPPER FACTORY BRANCHES

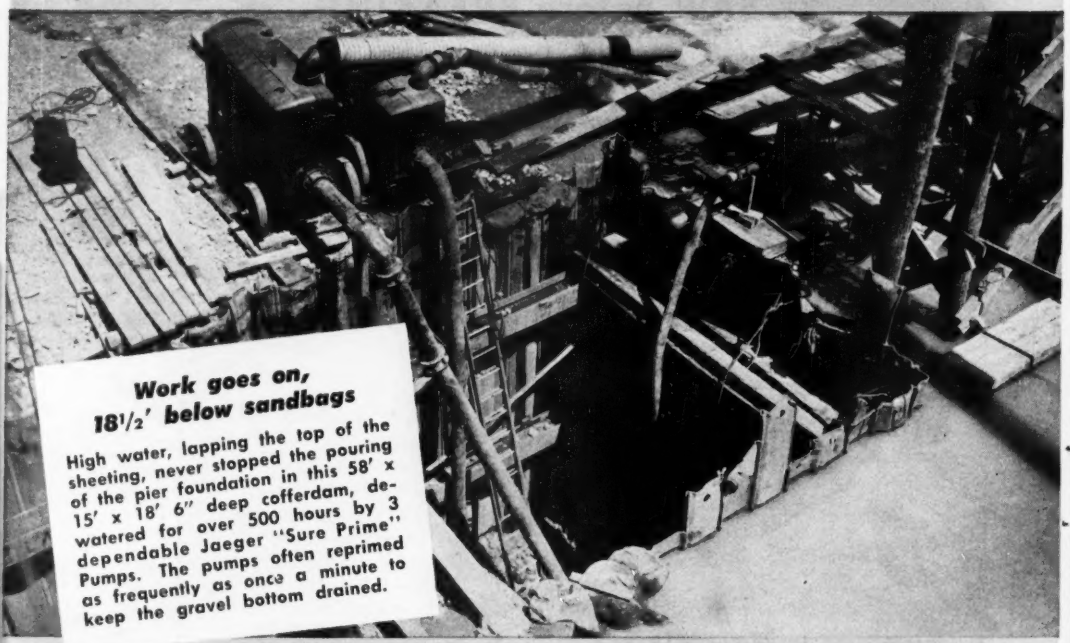
Clipper® Power Cutting Tools
NATION-WIDE DIRECT FACTORY SERVICE
MANUFACTURING CO.
KANSAS CITY 8, MISSOURI
Cable Address: CLIPPER K. C. Mo.
ST. LOUIS • PHILADELPHIA • WASHINGTON, D. C. • PITTSBURGH
SAN FRANCISCO • DETROIT • CLEVELAND • ATLANTA • BOSTON
NEW YORK • HOUSTON • AUSTIN, TEX. • CHICAGO • CINCINNATI

FREE TRIAL
You Can Test—Actually Try A Clipper Concrete Saw On Your Job Without Obligation. It's Your Guarantee Of Perfect Performance.
MAIL COUPON NOW... for full details on..... FREE TRIAL

CLIPPER MANUFACTURING CO.
CONCRETE SAW DIVISION
2809 E. WARWICK • KANSAS CITY 8, MO.
Send FREE—literature, information, and prices on the NEW—CLIPPER CONCRETE SAWS 3C

NAME _____
COMPANY _____
STREET _____
CITY _____ STATE _____

6 jobs that you can do at lowest cost with Jaeger-engineered equipment



Work goes on, 18½' below sandbags

High water, lapping the top of the sheeting, never stopped the pouring of the pier foundation in this 58' x 15' x 18' 6" deep cofferdam, dewatered for over 500 hours by 3 dependable Jaeger "Sure Prime" Pumps. The pumps often reprimed as frequently as once a minute to keep the gravel bottom drained.

Oversize design pays off in Jaeger Pumps: Larger shells and impellers, double priming action and use of the largest engines applicable enable Jaegers to prime and pump at lower operating speeds than other pumps. Means less abrasive wear and longer service from both pumps and engines.

Jaeger Compressors speed up jobs with 15% to 25% more air: The "Air Plus" Model 125 (20 ft. more air than old 105's) efficiently runs this 5 hp. Ka-Mo drill, or 2 heavy paving breakers or a heavy rock drill. 75, 185, 250, 365 and 600 ft. sizes offer comparable advantages.

100 cfm more air does 40% more work

600 cfm of 100 lb. air (the new standard set by Jaeger) runs two 4" wagon drills at top efficiency, drills 40% more footage than you used to get with 500 ft. compressors.

Note that traction is on subgrade. Machine is blending joint and laying flush to header.

JAEGER AGGREGATE SPREADER

for highway and airport base, secondary roads and black top drives

This paver-type spreader costs ½ the price of bituminous pavers and can lay both base and surface aggregates, free-flowing hot or cold bituminous mixtures and plant-mixed stabilized soil, in a wider range of widths and thicknesses — up to 12" of graded or fine materials or up to 10" of coarse stone, in widths to 11' — or courses of slightly less thickness up to 12½'. Crawler or 4-wheel drive. 2 models, for any size trucks.

Notice perfect surface prepared for the Finisher by the oscillating metering screed of the Spreader.

3-screed paving team for concrete slab

With its 12" oscillating screed, operating behind the spreading screw and strike-off, the Jaeger Spreader accurately meters the correct amount of material needed for proper finishing. Saves carry-back and insures uniform compression under the dual screeds of the Jaeger Finisher. Diagonal rear screed is also available on Type X Finisher for pitched slab or super-elevated curves.

More batches per day with Jaeger mixers

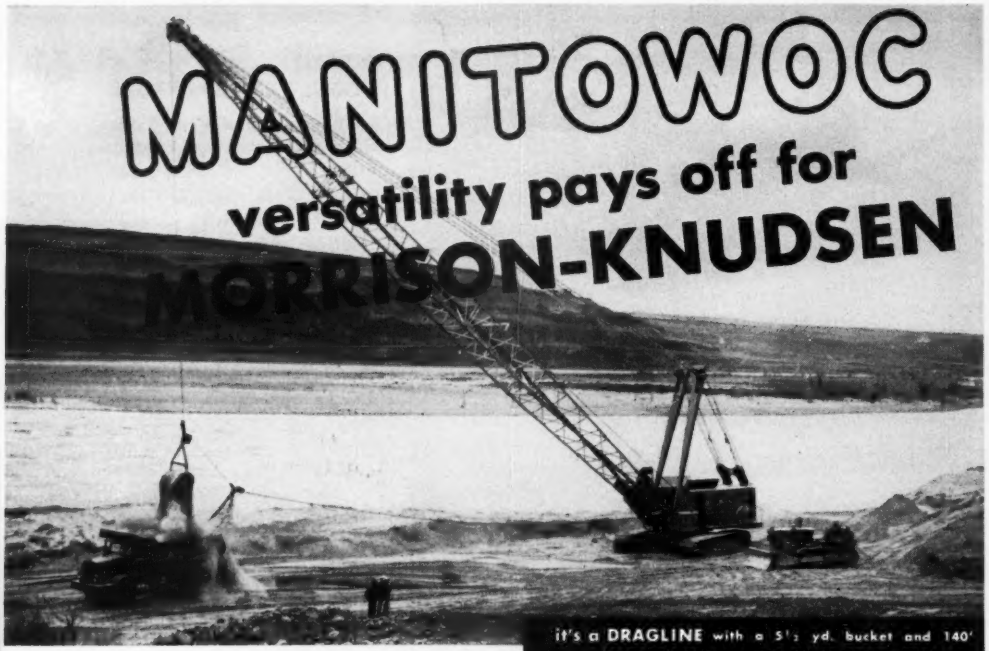
5 to 7 seconds charging with the famous "Skip Shaker" loader, plus equally fast discharge from the big bucket and flight blades of the Jaeger "Dual Mix" drum, shorten your mixing cycle for every batch. Means bigger daily yardage for Jaeger owners. Machined steel drum tracks, Timken bearing rollers and heavy duty automotive transmission mean longer life.

There's a Jaeger "service station" in 153 cities — always near your jobs. See your nearest Jaeger distributor for sales, rentals, service — or write us for complete catalogs.

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio **Cable Address BIGANLITLE**

MANITOWOC versatility pays off for MORRISON-KNUDSEN



it's a **DRAGLINE** with a 5½ yd. bucket and 140' boom relocating a railroad at Tomar, Wash.

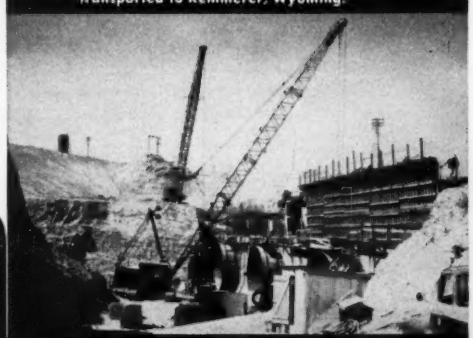
On the C. J. Strike Dam, Grandview, Idaho, the versatility of the big 5 yd. Manitowoc 4500 is really paying dividends for Morrison-Knudsen Co., Inc.; like it is for other contractors throughout the nation. One of these husky Manitowocs is handling a variety of jobs — alternating from dragline, to crane, to concrete setting as the situations arise—handling each job quickly, efficiently, economically.

Relocating a railroad at Tomar, Washington called for dragline work for a second 4500; then came a quick switch to shovel for the next job and a fast move to Kemmerer, Wyoming.

Not only are these large excavators "quick change" artists, but they can be shifted from location to location almost as fast as the ordinary small shovel. Ships on standard flat cars or trailers — erection time 3-5 days.

A Manitowoc 4500 will cut your costs too, give you small machine mobility and versatility plus big, low cost capacity. Get complete details. Manitowoc Engineering Works, Manitowoc, Wisconsin.

then it's a **SHOVEL** with a 5 yd. dipper and 50' boom transported to Kemmerer, Wyoming.



now it's a **CRANE** along with another Model 4500, erecting steel, turbines and pouring concrete.

MANITOWOC

SHOVELS 1-5 YD. — Speedcrane — CRANES 18-100 TON

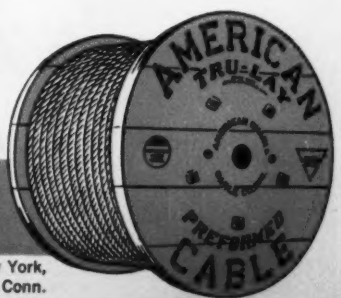
an ACCO product

TRU-LAY Preformed WIRE ROPE

● For each use there is *one best* wire rope . . . one that will stand repeated loading, abrasion, crushing, or continuous bending, and be the best rope to buy.

To achieve this, there is a TRU-LAY Preformed Wire Rope made in a special construction for your equipment. This construction has the exactly right combination of strength, bending life, and resistance to wear and crushing that you need.

The one best wire rope . . . TRU-LAY Preformed . . . will last you longer and cost less to use. Specify and get TRU-LAY Preformed improved plow steel—the rope identified by the Green Strand.



ACCO

TRADE MARK

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

NOW!

Speeds all these jobs — and many more!

1. Fastening wood sleepers to concrete floor slab.
2. Hanging steel sash and door bucks to concrete and brick.
3. Anchoring stadium, theatre and church seats to concrete or brick.
4. Fastening wood furring strips to concrete for attachment of metal lath.
5. Anchoring wood plates to concrete floors and ceilings for setting partitions.
6. Hanging radiator housings to concrete or brick.

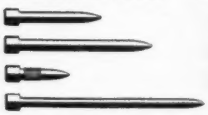
REMINGTON STUDS FOR ANY JOB

Genuine Remington studs are designed for specific fastening jobs. They are made of special hardened steel alloys permitting pull-out resistance as high as 2 tons, depending on the stud used. These studs were developed by Remington after exhaustive testing for hardness, strength and profile.

Cartridges are available in 5 different power loads, each clearly marked by colored plastic heel caps. These tough heel caps permit instant assembly of any cartridge with any Remington stud. Easily removed from the stud after driving, the heel cap also protects the thread of the driven stud.

EXTERNAL THREAD

STANDARD HEAD



BREAK-OFF HEAD

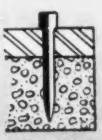
INTERNAL THREAD

Only Remington studs are identified by this target trademark on the head—it's your assurance of safe, dependable fastening.

It's fast, easy and safe to operate The Remington Stud Driver

Simply hand-assemble stud and power cartridge, load as a unit in easy-to-open Remington Stud Driver, and close.

Then press loaded Stud Driver firmly against surface, depress safety lever, and pull trigger.



Explosive charge imbeds stud solidly. Open Stud Driver with a twist of the wrist, eject empty shell, load next stud. Whole job takes seconds!

Do your construction fastening up to 100 times faster with the

NEW CARTRIDGE-POWERED MODEL 450

REMINGTON STUD DRIVER

and do it safely!

LOOK AT ALL THESE FEATURES

COMPACT AND PORTABLE—Weighs only 5½ pounds, ideal for scaffold, ladder, overhead work, inaccessible places. Comfortable to use in any position.

SPEED—One man can set up to 5 studs per minute, as much as 100 times faster than other methods. Sets stud at whatever depth is required up to 2¾ inches, depending on material.

ELIMINATES INVESTMENT in outside power source—Self-powered. Especially useful in isolated places.

FOUR WAYS SAFE—Plainly visible red dot indicator shows when it's cocked; safety lever must be depressed before and during squeezing of main trigger; permanently attached safety shield must be compressed against work before Stud Driver will operate. Stud Driver will not operate if tilted at more than a slight angle. Slight recoil. Low noise level.

RUGGED—All working parts of the Stud Driver are made of heat-treated alloy steels, housing of strong, light weight aluminum that carries no operating stress. Lining of safety shield is a solid block of tough, resilient Du Pont neoprene.

PRICE for Model 450 Remington Stud Driver complete in rugged steel carrying case—only $119.50.

Firmly fastens steel or wood to concrete or steel *in seconds!*

With the amazing new Remington Stud Driver you can set fastening studs up to 100 times faster than with conventional methods . . . and cut costs, too. This revolutionary fastening tool easily sets as high as 5 studs per minute . . . with no outside power source—no other equipment needed!

Easy to operate, the Remington Stud Driver weighs only 5½ pounds. It's compact, rugged and safe! With one lightning-fast operation, this self-powered tool firmly fastens steel or wood structural pieces and fittings to concrete or steel surfaces . . . a squeeze of the trigger and the job is done!

Test-proved to be the world's finest and speediest fastening system, the Model 450 Remington Stud Driver is made by Remington Arms Company, Inc., *America's oldest and foremost sporting arms manufacturer.* To obtain detailed information on this time- and money-saving tool, and for the name of your nearest distributor, fill out and mail the coupon below.

"If It's Remington—It's Right!"

Remington

DU PONT

Remington Arms Company, Inc.
Industrial Sales Division, Dept. CM4
939 Barnum Ave., Bridgeport 2, Connecticut

I am interested in obtaining descriptive literature on the Model 450 Remington Stud Driver.

*Name*_____

*Firm*_____

*Position*_____

*Address*_____

*City*_____ *State*_____

LET ME TELL YOU ABOUT

ACROW SHORES

And How They Helped Lower Our Costs

When we switched to ACROW Adjustable Steel Shores, our shoring costs went down. Here's why—we got rid of the expensive jobs of cutting, wedging, and nailing old-type wood shores. Another thing, with ACROW steel shores there's 100% salvage. The high cost of reprocessing wood shores to size is eliminated. ACROW Shores can be used on any type of job because they're adjustable—and ACROW'S all-steel construction lasts indefinitely.

Direct labor costs went down, too, because ACROWS are one-man shores—one man erects an ACROW Shore—it took two or more men to put up a wood shore.

1, 2, 3 and They're Up Seconds Instead of Minutes

One man can easily erect an ACROW Shore accurately, in less time . . . by following these three simple steps:

1. Lift inner tube to approximate height required . . .
2. Insert steel pin in nearest hole . . .
3. Turn Collar Handle for final adjustment to exact height required.

With this speed and ease of erection, it's easy to see why more than 1,000,000 ACROW Shores are now in use—all over the world.

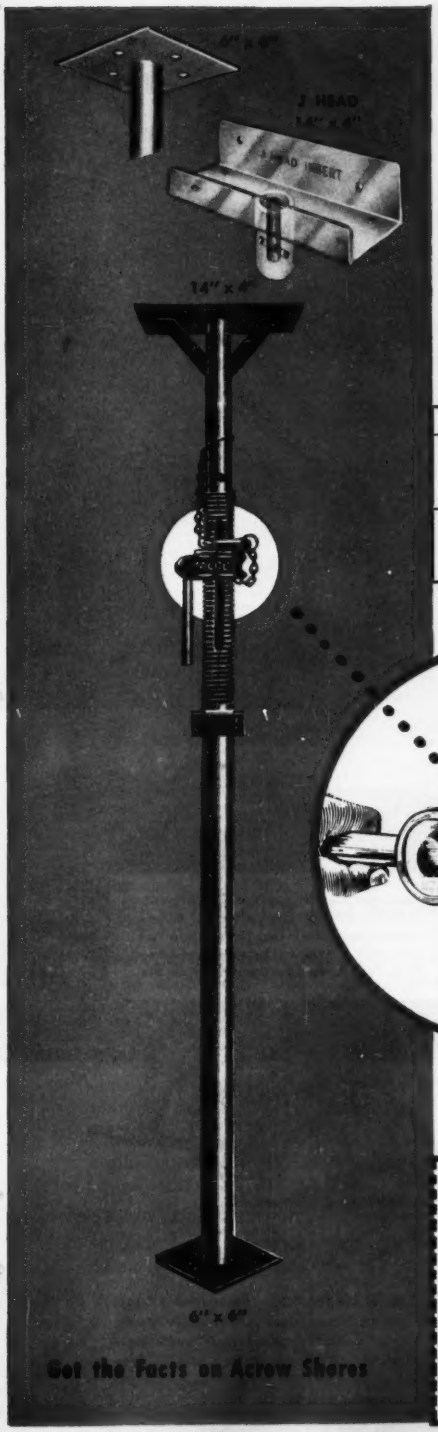
ACROW INC.

UNITED STATES OFFICES

Chicago, MIchigan 2-1010 — **Boston,** DEvonshire 8-7174 — **Atlanta,** Emerson 3716 — **Houston,** Underwood 8514 — **Dallas,** Riverside 6051 — **Birmingham,** 7-5151 — **Los Angeles,** Lomita 2889 — **New York,** LExington 2-7595 — **Philadelphia,** LOcust 7-5553 — **San Francisco,** ATwater 2-1442

ASSOCIATE COMPANIES

Acrow (Engineers) Ltd. • **London** • Ambassador 3456
Acrow (Canada) Ltd. • **Montreal** • VEndome 2488
Acrow Engineers (Pty.) Ltd. • **Johannesburg** • 22-7245
Acrow (Pty.) Ltd. • **Sydney** • UX 6473
Acrow Venezuela S.A. • **Caracas** • 85467
Acrow Brazil S.A. • **Rio de Janeiro** • 28-1053
Acrow Uruguay S.A. • **Montevideo** • Galicia 957
Acrow Argentina S.A. • **Buenos Aires** • 32-1175
Acrow Peru S.A. (Ingenieros) • **Lima** • 40076



Get the Facts on Acrow Shores

ACROW

ADJUSTABLE STEEL SHORES

ACROW Shores are engineered and built, from base to head, for the safest, most secure support on the job. The completely positive, simple action leaves no chance for slippage.

GENERAL SPECIFICATIONS

Shore Sizes, Dimensions, Weights, and Capacities

Size No.	Height		Weight in lbs.	Failing Load		Recommended Safe Working Load	
	Fully Closed	Fully Extended		Fully Closed	Fully Extended	Fully Closed	Fully Extended
1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2½ in.	12 ft. 5½ in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5225 lbs.	2050 lbs.

Head Types: Standard Shore 6" x 6" | Beam Shore 14" x 4" | J Head 14" x 4"

Head Fittings: Stirrup-Head and Scaffold-Head various dimensions to specifications.

Acrow Shores are Self-Cleaning

ACROW Shores are always ready for instant use. A unique spur-tooth extension of the collar nut extends over a segment of the threaded tube. With a turn of the collar handle, encrusted concrete, dirt, and grit are easily removed from the threaded tube. Simplicity in design—a minimum of working parts—make ACROW Shores easier to use, more economical, and they can be compactly telescoped for space-saving transport or storage.

Over 1,000,000 Acrow Shores in Use!

The World's Largest Selling Shore

ACROW, INC. Dept. CM-4, 510 North Dearborn St., Chicago 10, Ill.

Gentlemen: Please send me the following free bulletins (Please Check)

☐ ACROW SHORES ☐ COLUMN CLAMPS ☐ TRENCH JACKS

Name_____

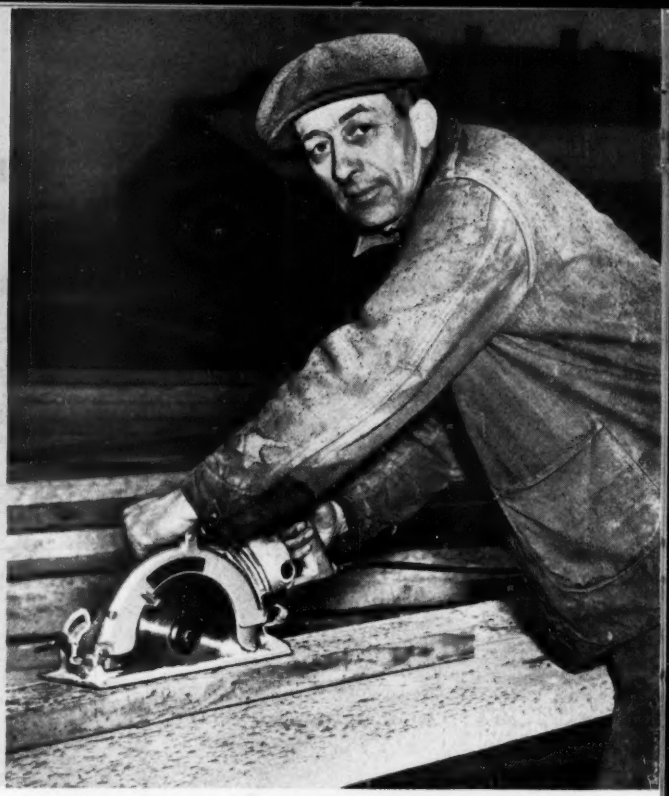
Company_____

Address_____

City_____ Zone____ State_____

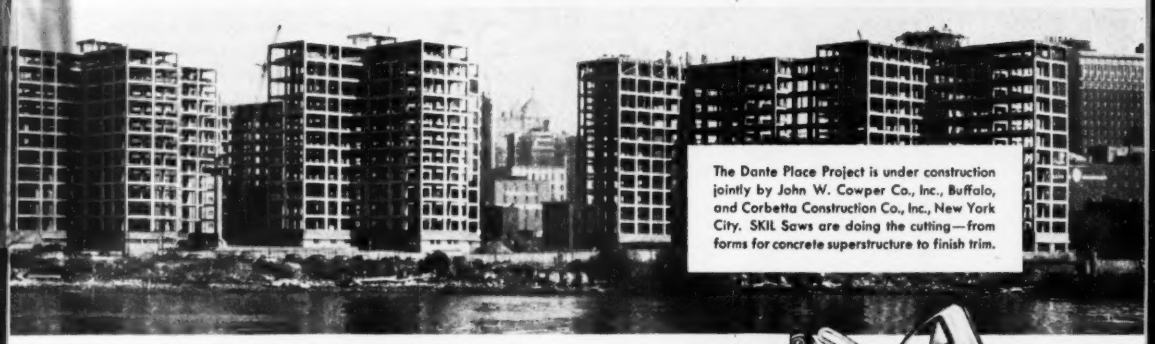
"We're using SKIL Saws on this 7-building project for 2 reasons"

Says **Nelson Cameron,** Carpenter Foreman on Dante Place Project, Buffalo, being built by
JOHN W. COWPER CO., INC.
Buffalo, and
CORBETTA CONSTRUCTION CO., INC.,
New York City



1 Because you can *see the cut* with SKIL Saws. Nelson Cameron says, "With a SKIL Saw, you can see the guide line, guide notch and blade—*all* while standing in a normal working position. Greater sawing accuracy is a natural result."

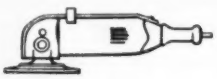
2 "SKIL Saws are safe," says Foreman Cameron. "Their geared-down power prevents stalling, and produces more work. The reduction gearing reduces maintenance, too, by easing strain on the motor."



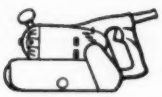
The Dante Place Project is under construction jointly by John W. Cowper Co., Inc., Buffalo, and Corbetta Construction Co., Inc., New York City. SKIL Saws are doing the cutting—from forms for concrete superstructure to finish trim.

SKIL PORTABLE TOOLS

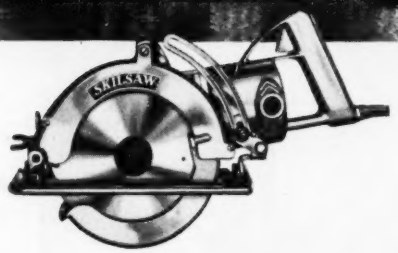
SKIL Drills



SKIL Disc Sanders



SKIL Belt Sanders



SKIL Saw Model 825—Powerful 8¼" saw with 2⅜" cutting capacity. Base adjustments: 0" to 2⅜" vertical depth of cut; 0° to 45° bevel adjustment; 2⅛" depth of cut at 45°. Free speed of blade: 3000 r.p.m. Overall length: 18". Weight: 17¼ lbs.

SKIL Products are made only by SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
Skilsaw Factory Branches in 34 Principal Cities.
In Canada: Skiltools, Ltd., 3601 Dundas Street West, Toronto 9, Ont.

See your distributor for complete information or call your nearest SKILSAW factory branch

THIS IS THE DIESEL

for any job from 32 H.P. up

General Motors builds Diesel engines that do jobs no Diesel ever did before. We've made them sturdy, more powerful, more compact. And along with that, we've given them all the things you want in a work engine.

The GM Diesel starts quickly on Diesel fuel. It delivers a smooth, steady flow of power. It gets more work done in less time because it is faster-accelerating—reacts to varying loads with a snap and responsiveness other engines of its size can't match.

This power-packed 2-cycle Diesel fits in about the same space as gasoline engines of comparable horsepower—*and provides fuel and maintenance savings of 40% to 70%.*

You'll find this versatile Diesel available in more than 750 different kinds of equipment built by over 150 manufacturers. Write us or see your GM Diesel distributor for the complete list.

DETROIT DIESEL
ENGINE DIVISION
GENERAL MOTORS · DETROIT 28, MICHIGAN

Single Engines . . . 32 to 275 H.P. Multiple Units . . . Up to 800 H.P.

GM
GENERAL MOTORS
DIESEL POWER

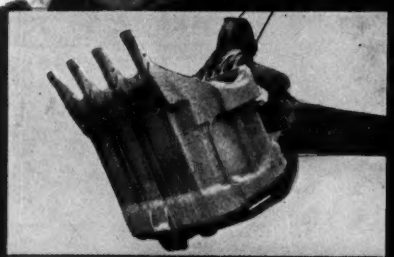
FOR HOISTING

FOR HARVESTING

SOME MIGHTY BIG CONTRACTORS ARE TRIPLING THE LIFE OF WEAR SURFACES* AT ONLY HALF THE COST OF OTHER METHODS BY USING WEAR-ARC ELECTRODES

*and they are conserving critical metals

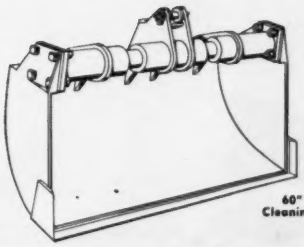
ANY equipment parts that are subject to rough impact or severe abrasion are likely applications for Wear-Arc hard facing. Write for Bulletin 5651 for application information and welding procedures.

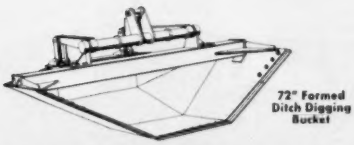


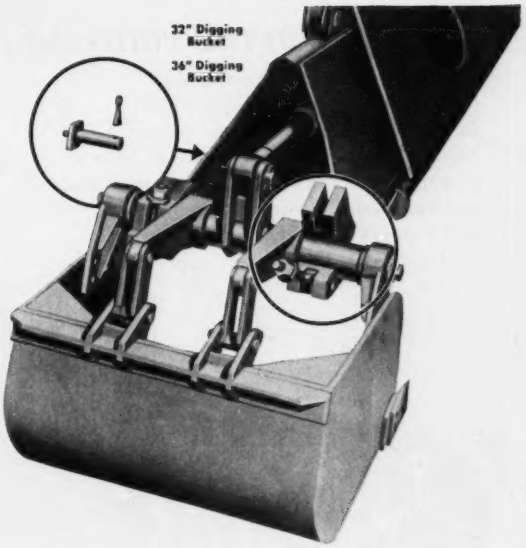
Alloy Rods Co.

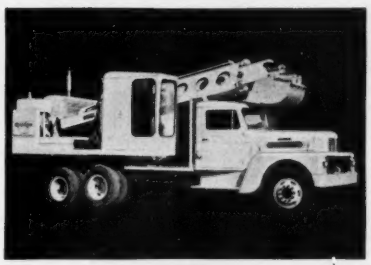
ALLOY RODS COMPANY
No Finer Electrodes Made . . . Anywhere
YORK, PENNSYLVANIA

AR-5

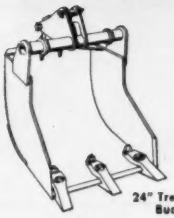


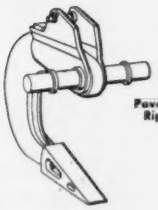


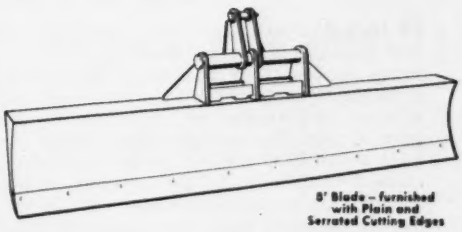




In less time than changing a tire... your GRADALL is a "new" machine







NOW YOU CAN REPLACE several specialized construction machines, and practically all clean-up labor, with one versatile machine—the Gradall.

Shown are some of the wide variety of tools for the many specialized jobs performed by the Gradall. All can be carried right on the Gradall. And because they can be quickly interchanged, in a matter of minutes you can have a "new" machine for the job at hand—whether it's trenching, excavating, pavement removal, ditch cleaning, grading, or backfilling.

If your construction involves various types of jobs, this should give a good idea of how the Gradall can cut costs for you. Ask your Gradall Distributor for a field demonstration.

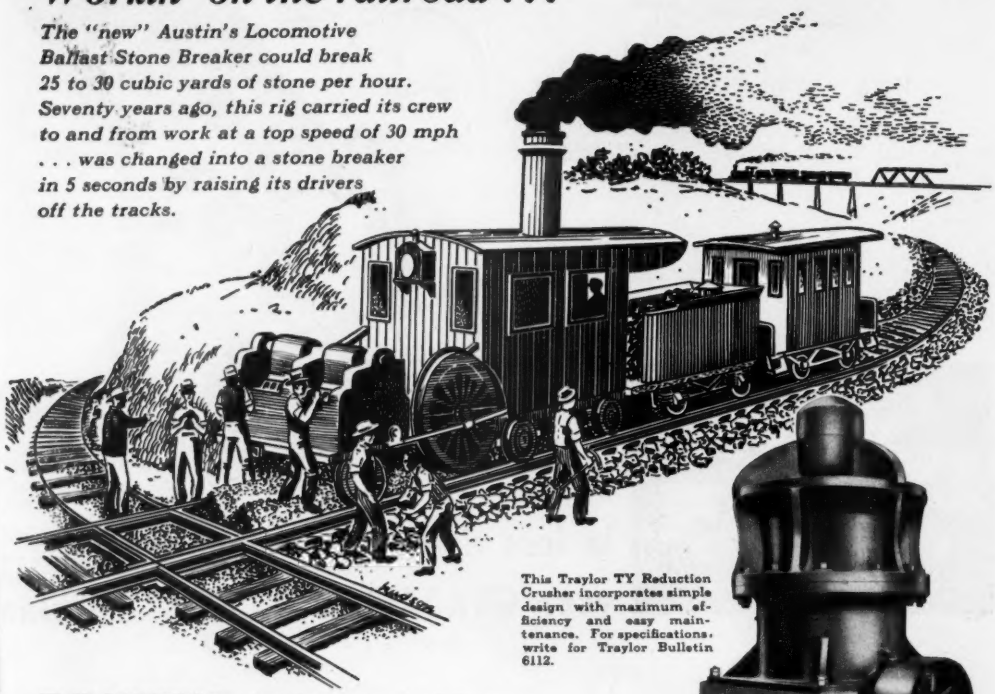
Gradall
DIVISION OF WARNER & SWASEY Cleveland

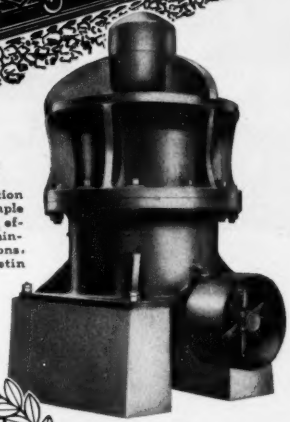
Gradall Distributors in over 60 principal cities in the United States and Canada

GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE *with Controlled Down Pressure*

Workin' on the railroad . . .

The "new" Austin's Locomotive Ballast Stone Breaker could break 25 to 30 cubic yards of stone per hour. Seventy years ago, this rig carried its crew to and from work at a top speed of 30 mph . . . was changed into a stone breaker in 5 seconds by raising its drivers off the tracks.

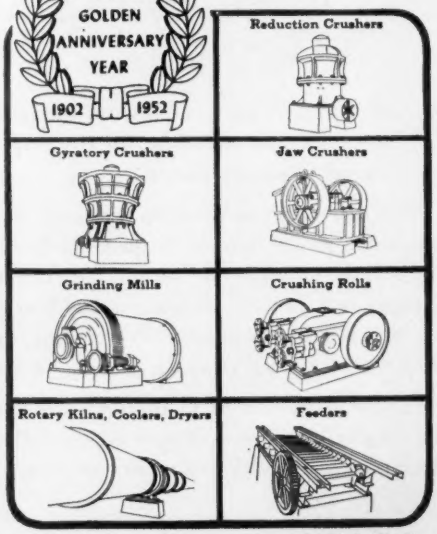




This Traylor TY Reduction Crusher incorporates simple design with maximum efficiency and easy maintenance. For specifications, write for Traylor Bulletin 6112.

IT IS AMAZING how fast the construction industry has progressed in just one man's lifetime! Of all the things our country is noted for, perhaps the greatest is its ability to develop machinery to save the labor of men . . . the cause and keystone of its ability to grow so fast. For over 50 years, Traylor has been most active in furthering the development of more efficient machinery for the construction industry. In fact, Traylor equipment is known all over the world for its modern design and rugged dependability. Construction men have come to depend on experience to supply the answers . . . not only in their own work, but in the work of men who supply them with the tools they need. That's why they depend on Traylor. For Traylor has experience . . . half a century of it.

OUR GOLDEN ANNIVERSARY YEAR
1902 1952

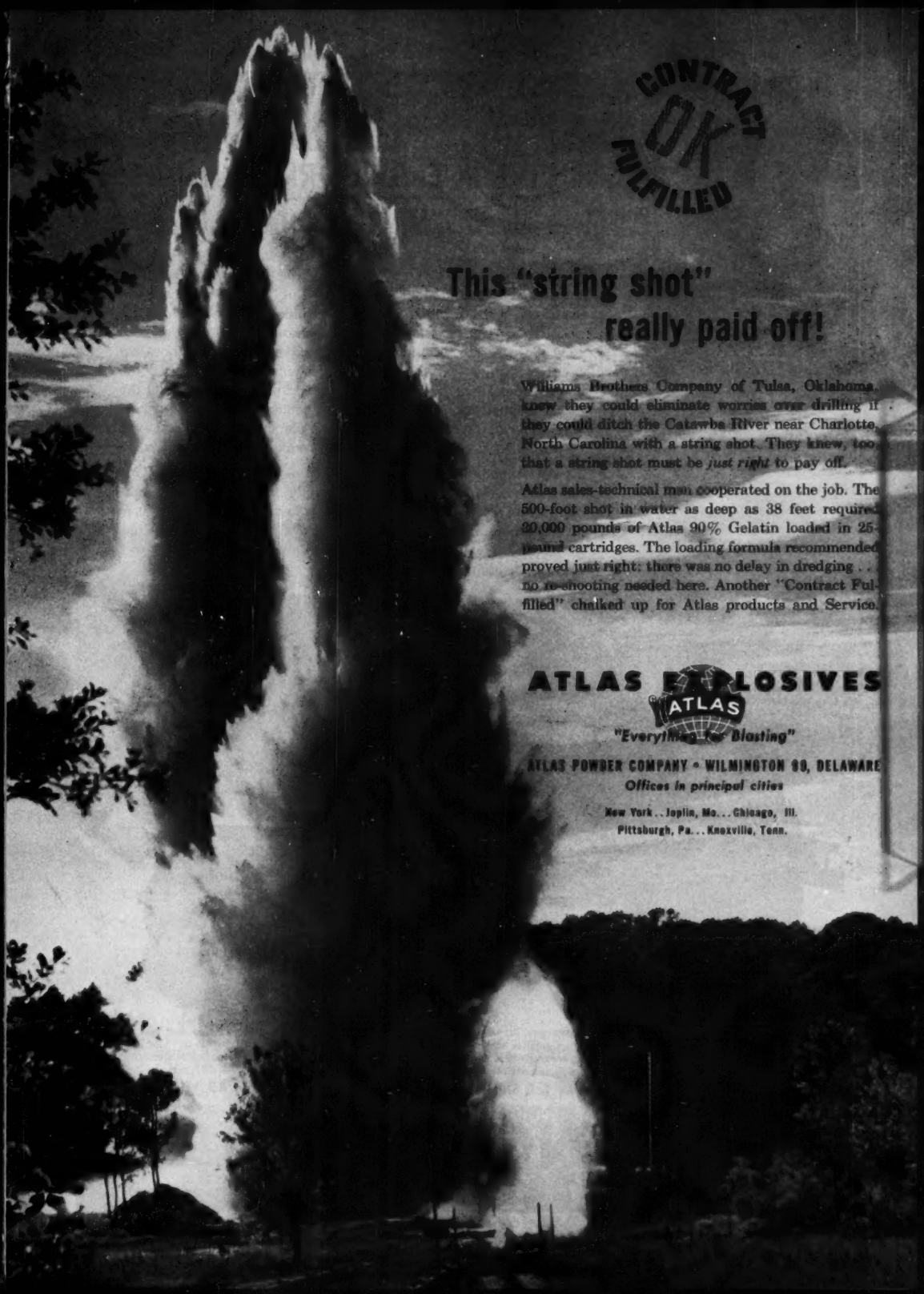


Traylor

ENGINEERING & MANUFACTURING CO.
457 MILL ST., ALLENTOWN, PA.

Sales Offices: New York • Chicago • Los Angeles
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

A TRAYLOR LEADS TO GREATER PROFITS

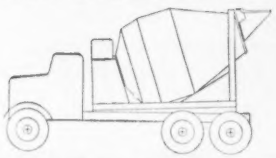

CONTRACT
OK
FULFILLED
This "string shot"
really paid off!
Williams Brothers Company of Tulsa, Oklahoma, knew they could eliminate worries over drilling if they could ditch the Catawba River near Charlotte, North Carolina with a string shot. They knew, too, that a string shot must be *just right* to pay off.
Atlas sales-technical men cooperated on the job. The 500-foot shot in water as deep as 38 feet required 20,000 pounds of Atlas 90% Gelatin loaded in 25-pound cartridges. The loading formula recommended proved just right: there was no delay in dredging . . . no re-shooting needed here. Another "Contract Fulfilled" chalked up for Atlas products and Service.
ATLAS EXPLOSIVES
ATLAS
"Everything for Blasting"
ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE
Offices in principal cities
New York . . Joplin, Mo. . . Chicago, Ill.
Pittsburgh, Pa. . . Knoxville, Tenn.

Smile with Smith-Mobile

Smith TRUCK ENGINE DRIVE Certainly Solves My Weight Distribution Problem!

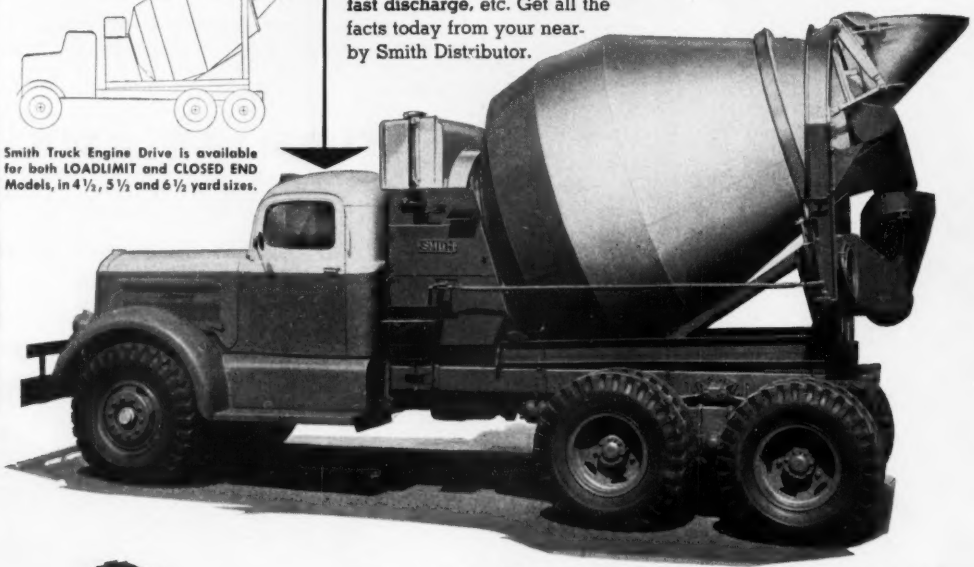
You'll like Smith-Mobile's new Truck Engine Drive because it gives you a much **better weight distribution.** The engine on the mixer is eliminated. That **reduces deadweight of mixer by about 1300 lbs.** and enables you to carry **bigger payloads** without exceeding highway weight limits. But even more important is the fact that the mixer is considerably shorter with the result that the **mixer drum is mounted much closer to the cab,** removing considerable weight from the rear axle and placing it on the front axle. That enables you to **meet stringent rear-axle load restrictions.**

Smith separate engine drive compared with truck engine drive. Note how mixer drum is mounted closer to cab, moving weight forward.



Smith Truck Engine Drive is available for both LOADLIMIT and CLOSED END Models, in 4 ½, 5 ½ and 6 ½ yard sizes.

These Truck Engine Drive units also have other advantages. One engine instead of two engines naturally means **less fuel consumption** and **less engine maintenance** and, of course, they have all the usual Smith-Mobile advantages of **long life, low maintenance costs, rear-end charging, visible mixing, fast discharge,** etc. Get all the facts today from your nearby Smith Distributor.



Have you investigated Smith LOADLIMIT Models? They weigh less and cost less than smaller size closed end machines. Yet they haul bigger payloads. The initial investment is less and operating costs are lower. The rear-end door unit is eliminated, reducing maintenance costs to rock bottom. Ask for Bulletin No. 251.

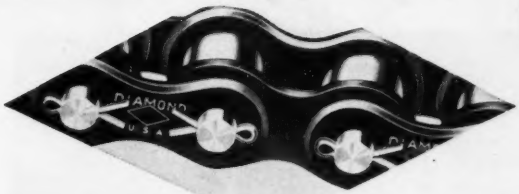
The T. L. SMITH CO., 2851 N. 32nd St., Milwaukee 45, Wis., U.S.A.

SMITH
THE T. L. SMITH CO. MILWAUKEE U.S.A.

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

FOR MAXIMUM PERFORMANCE



DIAMOND ROLLER CHAINS

Osgood shovel with Diamond Roller Chain on crowd drive. Main drive chains carry power from the engine to reversing shaft, powering swing, travel, boom hoist and main hoisting shafts.

The men who build and operate first-class equipment know that every component part must be of the same highest quality to obtain maximum performance and operating economy.

Diamond Roller Chains are chosen for original equipment and specified for replacement because they provide the long-life durability, and on-the-job economy that is both a credit to the manufacturer and an asset to the contractor.

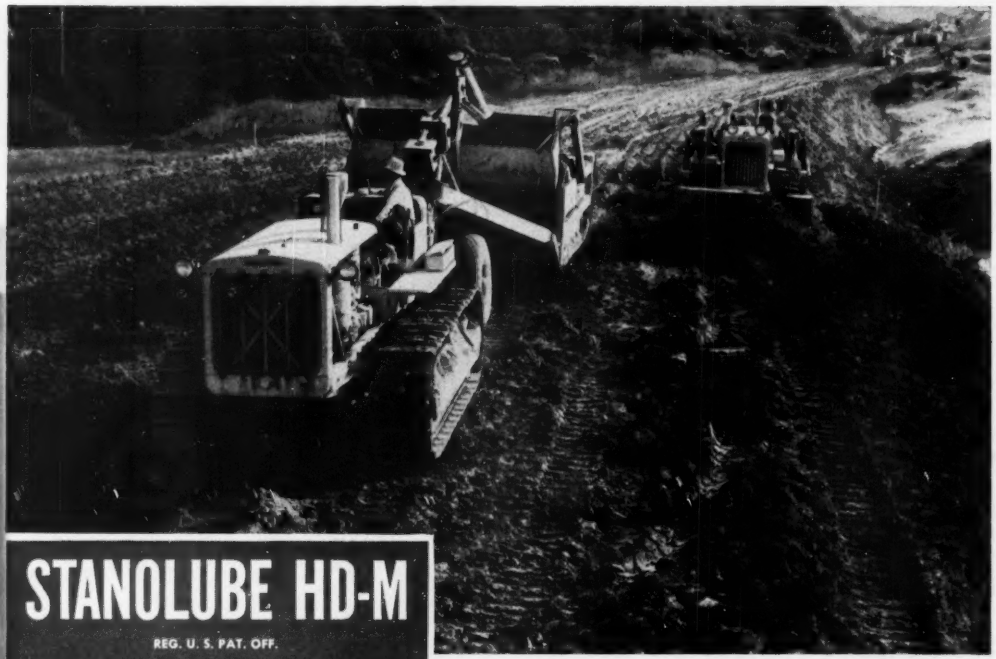
DIAMOND CHAIN COMPANY, Inc.
Dept. 418, 402 Kentucky Avenue
Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

●

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

A new and better heavy-duty motor oil



STANOLUBE HD-M

REG. U. S. PAT. OFF.

Motor Oil

for your harder-working engines

• New and better STANOLUBE HD-M Motor Oil is an improved additive-type lubricant that combines more effective detergent-dispersant action with greater oxidation stability. Result: greater protection for commercial and military trucks, busses, and construction equipment . . . greater protection for *your* harder-working engines.

More effective detergent-dispersant action and greater oxidation stability, proved by laboratory tests and confirmed in extensive field service, mean that engines stay cleaner under the toughest of operating conditions. Freedom from deposits means less engine wear, longer periods between overhauls, and lower maintenance costs. New STANOLUBE HD-M also offers the same bearing corrosion resistance and freedom from foaming which helped make STANOLUBE HD a preferred lubricant for heavy-duty applications during the past nine years.

Your nearby Standard Oil service-supply center stocks STANOLUBE HD-M Motor Oil for fast *local* delivery. This service-supply center is also headquarters for your Standard Oil lubrication specialist. Call him today. He can help you obtain maximum lubrication benefits with STANOLUBE HD-M, a new and better heavy-duty motor oil. Or write: Standard Oil Company (Indiana), 910 South Michigan Ave., Chicago 80, Illinois.

STANDARD OIL COMPANY

STANDARD *(Indiana)*

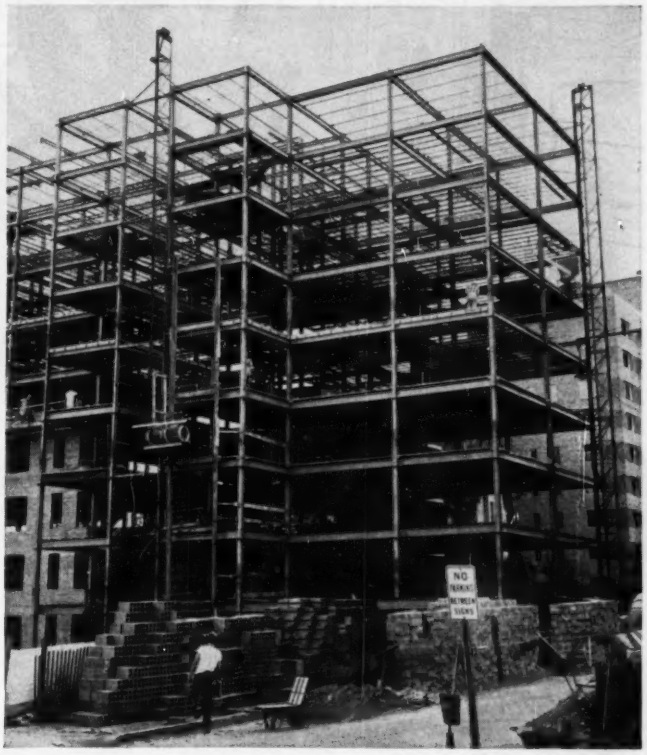
Two loads every trip

There's nothing "skimpy" about the fast-moving, self-erecting American Portable Material Elevator. It lifts two wheelbarrows or concrete buggies at every trip on its big 6'x6' platform.

The PME's 60-second trip cycle gets material up fast, helps keep work moving. Standard tower is 46', or goes up to 96' by adding 10' sections. Yet one truck brings the elevator to the job.

Lifting capacity is 2,500 lbs., using the standard platform or the optional ½ yd. self-dumping concrete bucket (shown on elevator at right, in photo). Also available are 9' swing boom, automatic safety device and transport wheels.

See your local American Hoist distributor. He rents or sells The American Portable Material Elevator, and will be glad to give you information.



Modernize...economize...with

American Hoist
& Derrick Company
ST. PAUL 1, MINNESOTA

2 **Mail this coupon** 2252

American Hoist & Derrick Co.
St. Paul 1, Minnesota

● Please send catalog on

AMERICAN PORTABLE MATERIAL ELEVATOR

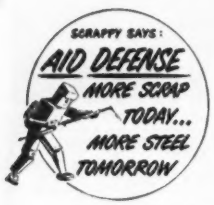
NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

Grandpa Never Threw a Thing Away



It's only human to want to hold on to things after they've outlived their usefulness. That's why today millions of tons of worn-out and obsolete equipment and machinery are lying forgotten in the country's plants and factories and on farms.

The steel industry needs these millions of tons of dormant scrap, needs it in the worst way. With this vital dormant scrap the entire steel supply picture would brighten up, with more steel for everybody. But without it, the steel industry cannot hope to keep up production at present levels.

Call in a scrap dealer now, today. He will buy your dormant scrap and start it moving toward the steel mills.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

More Scrap Today... More Steel Tomorrow

Over-the-road or

OVER-THE-ROUGH

the proof is in the pulling!

EVERY day more and more cost-wise truck operators in every type of business are switching to GMC's—for a very practical reason.

No matter what kind of work you give it to do—a fast over-the-road hauling schedule or lugging huge loads out of logging camps—a GMC has the power and brawn to do the job, *and keep right on doing it year after year!*

In every use, you'll notice how each GMC is "engined" to meet the challenge of the task.

Reason for this is the fact that GMC builds the widest range of truck engines in the industry—valve-in-head gasoline engines from 100 to 200 H. P., exclusive 2-cycle Diesels from 110 to 225 horsepower.

As a result, no GMC owner need strain away the life of his truck because of underpowering—or lose profit to a fuel eater that is unsuited for its job. *GMC gives him exactly the kind of husky horsepower he needs.*

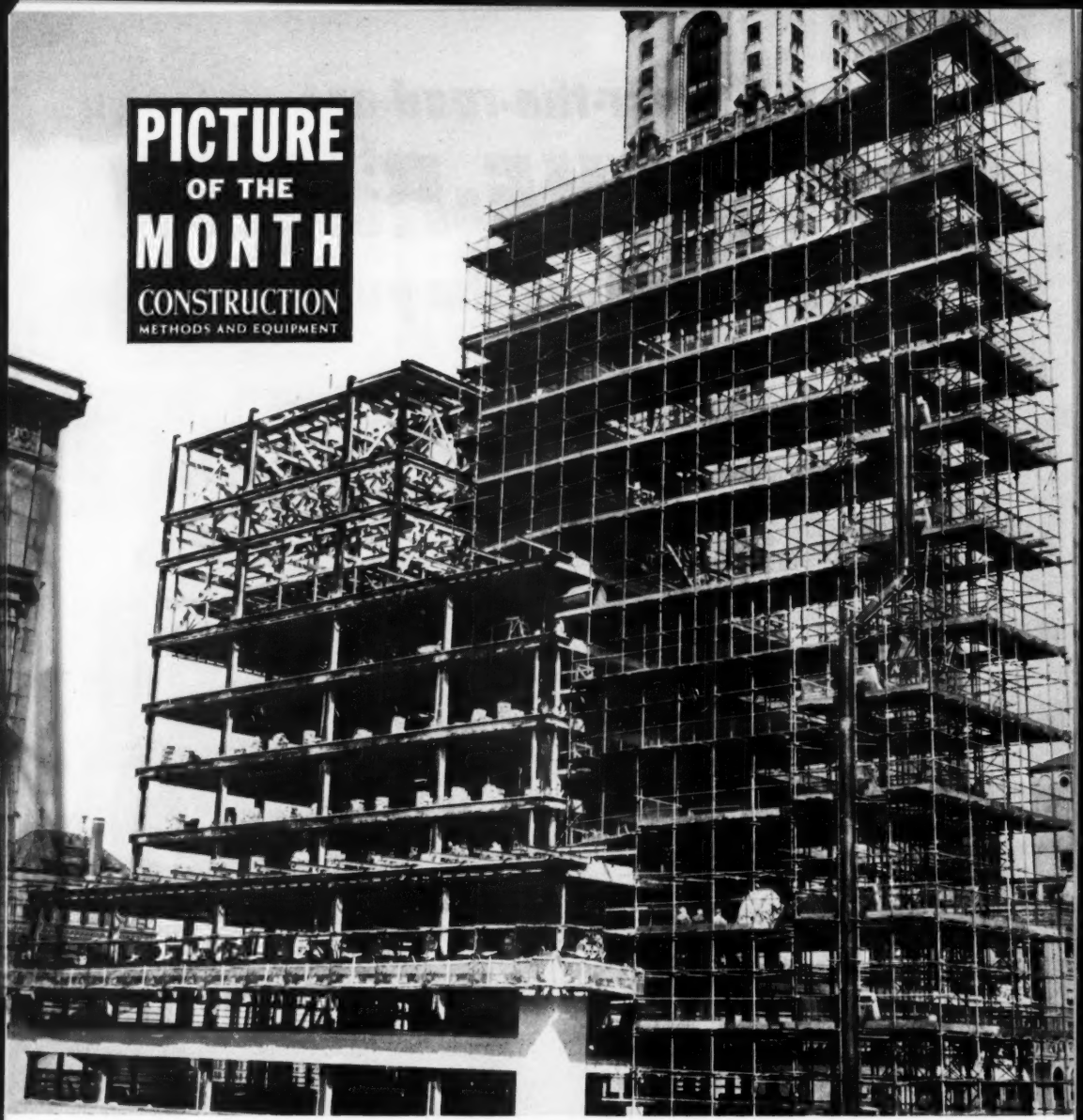
There are countless other solid reasons why your GMC dealer has the best truck, tractor or six-wheeler for your own hauling requirements.

Why not pay him a visit today?

GMC
GASOLINE & DIESEL TRUCKS
½ TO 20 TONS

GMC Truck & Coach Division of General Motors

PICTURE OF THE MONTH
CONSTRUCTION METHODS AND EQUIPMENT



Flying Bridges in the Sky

BUILDING THIS STEP-BACK SKYSCRAPER in mid-town New York City required longer and longer access bridges between hoist tower and floors as the structure advanced upward. The answer was a scaffold-supported runway for each of the 15 floors above the 10th, to make delivery of materials convenient and safe. The upper runways (20-25 stories above the street) are 100 ft long, supported by TubeLox scaffolding — interlocking tubes held by right-angle and adjustable-angle couplers. The scaffolding, erected from the ground, also holds working platforms around three sides of the Gold Medal steel hoist tower used by Hegeman-Harris Co. of New York, the general contractor. All runways are well screened and fitted with toeboards. Scaffold members become handy supports for the steel rubbish chute. Patent Scaffolding Co. manufactured the tubular steel scaffolding and the hoist tower, as well as 79 Gold Medal scaffolding machines installed for John B. Kelly, Inc., of New York, the mason contractor. Chesebro-Whitman Co., Long Island City, erected the main scaffolding, hoist tower and 496 ft of steel sidewalk bridge to protect the public.

use MARION BODIES AND HOISTS dump trailers for haulage efficiency

"Designed on the Job"

Many Marion owners are purchasing additional Marion Dump Trailers. These owners know the extra benefits that can be expected from Marion equipment.

They know that these benefits mean dollars saved . . . because of greater load-carrying capacities, less maintenance cost and fewer man-hours per-ton payload.

Marion all-welded Trailer Bodies are constructed to withstand sagging or twisting when loads are uneven or extra heavy. Marion's Heavy-Duty Hoists operate with extremely low, even oil pressures . . . without high-surge points during any part of the lift.

Marion Hoists are specially designed to provide load stability throughout the dumping cycle . . . thus reducing the possibility of overturning when operating under adverse conditions.

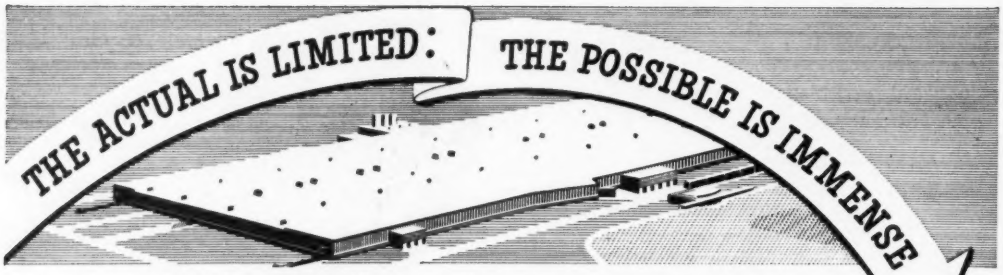
Marion's "Designed on the Job" Dump Trailers and heavy-duty hoists have the built-in endurance that insures a dependable, performance-plus operation.

Get all the facts . . . call your nearby Marion Distributor or write direct—today!

MARION BODIES AND HOISTS

METAL PRODUCTS CO.
Marion, Ohio, U. S. A.

Manufacturing a complete line of standard and special Hydraulic Hoists and Dump Bodies



NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

© LE Co. 1952

WELDED DESIGN SPEEDS ERECTION...

cuts construction costs 23%

By **W. A. Repp**
Repp & Mundt, Inc., Contractors
Columbus, Indiana

A FASTER, simpler method for constructing buildings with welded steel has gained several important benefits for our clients. For example, on this 500-ton framework, welded design enabled three—5-man crews to set and weld all steel in only 70 days. The structural cost for fabricating and erecting came to only $150 per ton as compared to $195 for traditional methods.

After construction was under way the owner decided to add a second story because of an increase in business. To accommodate his request required only to increase the column and beam sizes for the first floor and transfer original columns and beams to the second floor. With this design neither the owner nor the contractor was penalized through increased costs or delays in construction time.

Using simple, stiff leg derricks, columns were positioned on embedded base plates. When a number of columns were erected, beams were hoisted in position and welded. Structural members, like brackets and braces, were flame cut on the job and welded as required.

Fig. 3—120,000 Square Foot Factory Building *for The Hamilton Manufacturing Company, Columbus, Indiana. Factory will eventually enclose all the area to the boiler house.*

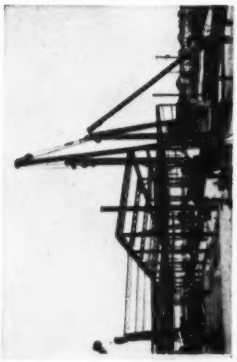


Fig. 4—Erecting Columns *using 1½ ton stiff leg derrick.*

WELDED DESIGN ALWAYS SAVES STEEL AND LOWERS COST

Fig. 1—Typical Beam-to-Column Connection *designed for second floor loading of 200 pounds per square foot. Columns are 8" x 8" and beams 12" x 12" H beams. Also shows bracket for crane rail.*

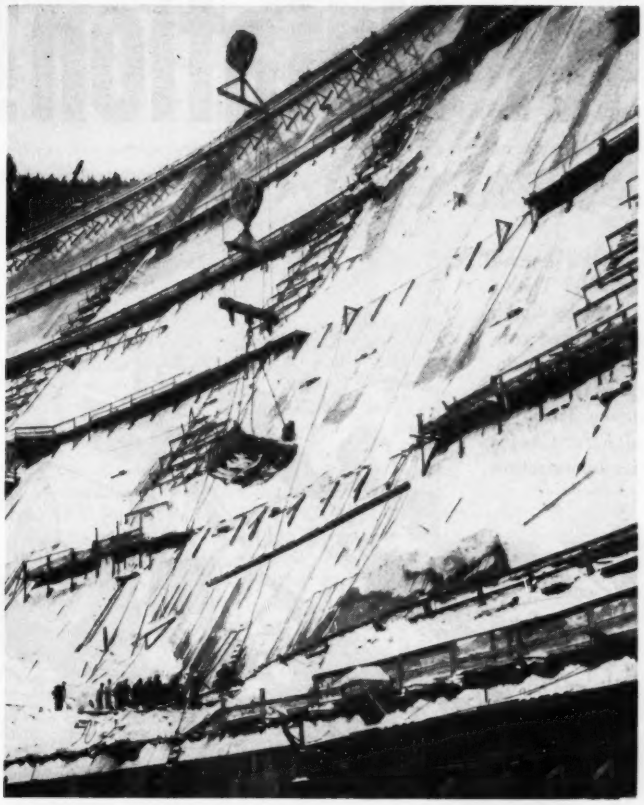
Fig. 2—Column-to-Base Detail— *Joint is welded in position after column is erected and plumbed.*

HERE'S MORE PROOF

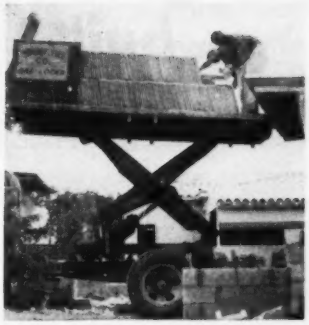
Studies in Structural Arc Welding free on request. Designers and engineers write on your letterhead to Dept. 172.

THE LINCOLN ELECTRIC COMPANY
CLEVELAND 17, OHIO
The World's Largest Manufacturer of Arc Welding Equipment

Construction News in Pictures . . .



WINTER'S TRADEMARK—Tons of snow and ice cascaded down the face of towering Hungry Horse Dam in northwestern Montana last winter. Chief victims of the avalanche's onslaught are the temporary catwalks for construction purposes. Crew is busy repairing them. Despite a record snowfall of 139 in., construction has been continued through the winter in the power plant to prepare for power from the first of four 71,250-kw generators in October.—Bureau of Reclamation photo



TOP - SIDE DELIVERY — Patent Tile Co., Opa Locka, Fla., delivers roof tile to the job, literally. The special truck with Gar Wood hoist elevates roofing materials to roof level, where it is no extra trouble to unload and saves the builder additional handling expenses.

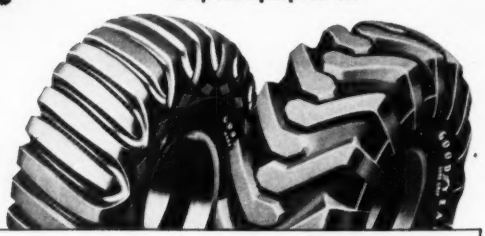
DRAG - LOG GRADER — Ballinger Paving Co., Greenville, S. C., uses this 10½-ft drag to bring highway sub-base to final grade. Hughes-Keenan swing crane mounted on International TD-14A crawler lifts this drag and other heavy pieces.

PACKED SNOW FOR RUNWAY— Army Engineers' crawler tractor and compactor are only signs of life in a vast Arctic snowscape in test to pack snow to support cargo aircraft. Machine was dropped by parachute, got landing strip ready for ski-equipped plane with supplies. Constant compacting soon permitted larger aircraft to come and go during the winter. By summer, gravel runway was ready. Bitter Arctic cold greatly increases wear and tear on construction equipment.—U.S. Army photo

designed- built- right- for flotation!

NEED a flotation tire you can depend on for free-rolling wheels? You've got it in Goodyear's huge, husky Earth Mover All-Weather giant. Rugged construction gives it outstanding dependability, while its nonclogging tread *adds* to its first-class performance. Result is maximum flotation and *First Choice* standing among profit-wise construction men.

You can't beat the Goodyear team for special-purpose tires



HARD ROCK LUG
Super-tough champ for all types of rock work

SURE-GRIP
Tops in traction on drive wheels of graders and pans

We think you'll like
"THE GREATEST STORY EVER TOLD"
Every Sunday — ABC Network

All-Weather, Sure-Grip—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Volume 34
Number 4

CONSTRUCTION
METHODS AND EQUIPMENT

APRIL
1952

Harold W. Richardson, Editor

Keep Your Shirt On, America . . . That Morocco Sun Is Hot!

AS A NATION of supposedly intelligent, mature people, we're acting mighty silly in getting all lathered up over the North African Air Base situation. Why? Because we're floundering around in a mess of wild charges, innuendoes, gossip, and Congressional hearings that so far smack of inquisition rather than sober, fact-finding motives.

Atlas Constructors, combined contractors on the big fixed-fee project involving five airbase installations in French Morocco for the U. S. Corps of Engineers, have been charged with "gross negligence, inefficiency, corruption and waste." Not so charged, mind you, by a court of the land, but by headline-seeking Congressmen sitting in inquiry committees.

Those are very serious charges, and the contractors certainly have a right to be heard. But up to now (late March) they have been denied this right—except that Army Secretary Pace has just demanded a statement from the contractors, which will be submitted early in April. But whether the contractors' story will be made public, or if they will be allowed to back it up with proven facts, is not known now. So far, presentation of their position has been limited to a six-minute hearing by an official testifying on labor procurement, and a press release that the press paid little attention to—it wasn't sensational enough.

We know those five contractors personally—Morrison-Knudsen, Bates & Rogers, Blythe Bros., Nello Teer and Ralph Mills—and they're a fine, capable, honest and patriotic group. We're not taking sides, blaming or defending anyone, because we don't have nearly all the facts at hand. But we've got to be shown before we'll believe those wild charges are true.

The federal agencies concerned—State Department, Defense Department, Air Force, and Corps of Engineers—and the architect-engineers also have been thumped soundly by Committee members. All in all, we've stirred up quite a mess.

Deep down in that mess are cold facts—facts that, viewed in the light of the existing urgency, will show just what happened. They should be dug out in a calm impartial investigation by competent parties with no axe to grind, political or otherwise. An investigation not to whitewash any group or agency, not to blame or crucify anyone, not to further inter-departmental rivalry—but an investigation to show where we failed, what went wrong, and most of all, what to do or not to do under similar circumstances in the future and the necessity for better planning next time.

And an investigation to be conducted with full realization of the urgency of the time—Spring, 1951—when military authorities demanded a "crash program" schedule to get certain facilities in operation by July 1, 1951, for a lot happens in rush construction that could be avoided in normal operations.

The job was a hectic nightmare from the first. Ordered to go to work January 3, 1951, the contractors soon set sail with men, materials and equipment to build one new field and rehabilitate four others. Delayed until mid-April because of the State Department's inability to conclude an enabling treaty with the French, they then found the project changed to build five new fields instead. That meant different equipment, new planning.

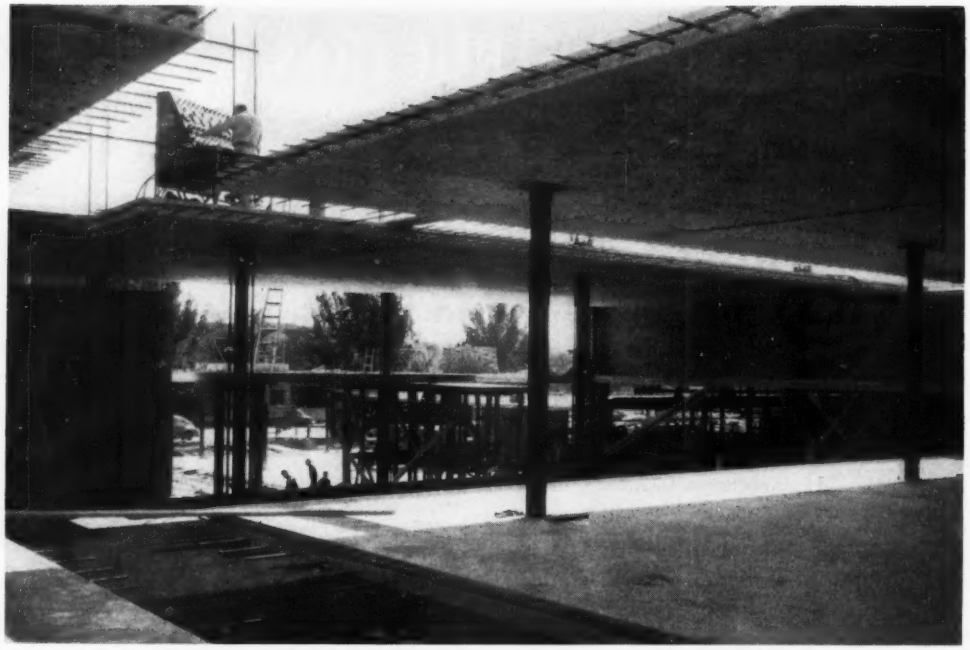
Incessant shifts in plans have plagued the project throughout. Jobs were started, stopped, re-started, moved to other locations, moved back in bewildering confusion. Blueprints couldn't keep pace with changes—more confusion. Native labor had to be trained; the French procurement commission had to be satisfied.

It's a wonder any results at all were accomplished—but in spite of all difficulties, the first facilities were ready July 14, just two weeks later than original schedule.

The Morocco deal is symbolical of the confused, almost hysterical times through which we are passing. As a people, we don't know where we're going or why. As a nation our plans are just as indefinite as were those of the North Africa airbases.

But let's keep our collective shirt on. No use getting our backs all blistered by that hot Morocco sun. We can learn a lot from over there if we want to. Besides, we've got a lot more airbases to build—and let's build 'em best we know how in light of bitter experience.

Rich



UP SHE GOES! Mezzanine slab section (below opening at lower left) is lifted by jacking assembly on top of columns to final position in Kansas City garment factory. Slabs are lifted to four different levels.

OPERATION SKYHOOK

Kansas City Building Slabs

LONG CONSTRUCTION CO., of Kansas City, Mo., is so enthused about the Youtz-Slick lift-slab method of building construction that it has organized a separate Skyhook Division within the company to handle this type of work. Long has just finished the first job with this method to be built outside of Texas, a garment factory for Stern-Slegman-Prins Co. in Kansas City.

Essentially the lift-slab system consists of erecting pipe columns; pouring the roof and intermediate floor slabs at ground level around column capital castings; then lifting the slabs into position by jacks on top of the columns operating through jacking rods engaging the castings. When slabs are in place, the castings are welded to the columns.

The method stems from the combined inventive genius of Philip N. Youtz, New York architect, and Tom Slick, Texas philanthropist, further developed by the Institute of Inventive Research and Southwest Research Institute of San Antonio, Tex.

Naturally there are some design problems differing somewhat from those of conventional flat slabs. But the plans were reviewed carefully by the Kansas City building department and were found to meet the city building code's strict requirements in every respect.

The building is one-story, except for a mezzanine section 229x321½ ft in over-all plan, supported by 34 columns. There is no basement, but utility lines are carried in three concrete block tunnels below ground level. Slabs were lifted to four levels: 10-ft roof over the office section; 15-ft roof over main manufacturing area; 22-ft roof high bay; and 9x131-ft mezzanine under the high bay roof. Exterior curtain walls are brick, concrete block and glass block.

First step in construction was to drill the foundation holes, 3 ft dia., about 14 ft deep down to solid bearing material with Williams truck-mounted auger drills (CM&E, Aug. '51, p. 49). These holes were filled with concrete to 30 in. below floor slab level. Columns, ranging from standard weight to extra-heavy 8-in. pipe, were then erected on base plates set on top of foundation concrete, perfectly plumbed by leveling nuts on the plate. Columns were fixed by backfilling with concrete to slab grade line. Then the utility trenches were excavated and lined with concrete block.

Next a 5-in. mesh-reinforced floor slab was poured over the entire building area. After a trowel finish the slab was sprayed with Techkote's Sealtex as an airing compound at the rate of 1 gal per 200 sq ft. As

PREPARATIONS at ground level for slab-raising job involve setting of pipe columns on deep-hole piers, excavating and lining utility trenches, and pouring first-floor slab (background). Excavation in foreground is for depressed heater room.

Lifted by Bootstraps

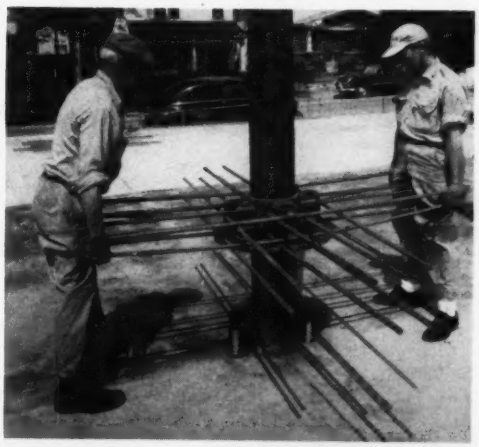
By TIP BROWN, Kansas City, Mo.

the slab was to serve as bottom form for the roof slabs, another coat of Sealtex was applied at the same rate just prior to placing roof slab steel as a separating medium between the two slabs.

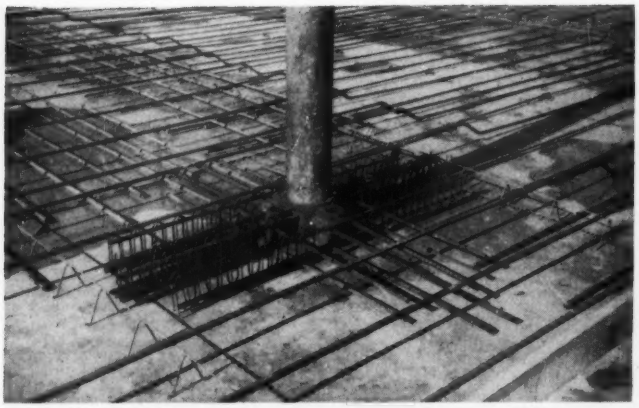
Now the job was ready for pouring the first section of 8-in. bar-reinforced roof slab. It would have been ideal to lift the entire slab for each height roof in one operation, but the jacking equipment available was limited to 12 columns. Since the lifts had to be split up, it was not found possible to handle a section greater than that encompassing 8 columns at one time. The first lift was typical, an 8-column section of 8-in. slab 40x83½ ft, 3,340 sq ft, weighing 167 tons.

Steel casting lifting collars, 220 lb each, which served as column capitals in the flat-slab design, were lowered over the columns to floor slab. These castings were drilled to accommodate jacking rods, which terminated in threaded sleeves at the bottom of casting holes.

Then the reinforcing was placed for the slab, tied into the castings. Pipe hanger inserts for bottom of slab were tack-welded to lower bars on 4x4-ft centers to serve also as low chairs to support the steel. This novel idea proved highly successful later, because of the large amount of piping that had to be



LIFTING CASTINGS, with reinforcing grid welded to them, are lowered over column after ground floor slab has been poured, troweled smooth and treated with two coats of Sealtex as a curing compound and slab separation medium. Threaded sleeve nuts on slab fit into jack-rod holes in casting, and then anchor jacking rods to casting for lifting.



REINFORCING FOR SLABS to be lifted is tied into the casting grids. High rod chairs are conventional, but low rods are carried by pipe-hanger inserts tack-welded to the bars and spaced 4 ft in both directions for hanging pipe and rack from ceiling. Only form required for lift slabs is 8-in. edge board, shown at lower right, which also serves as screed guide. Reinforcing extends through forms at slab joints.

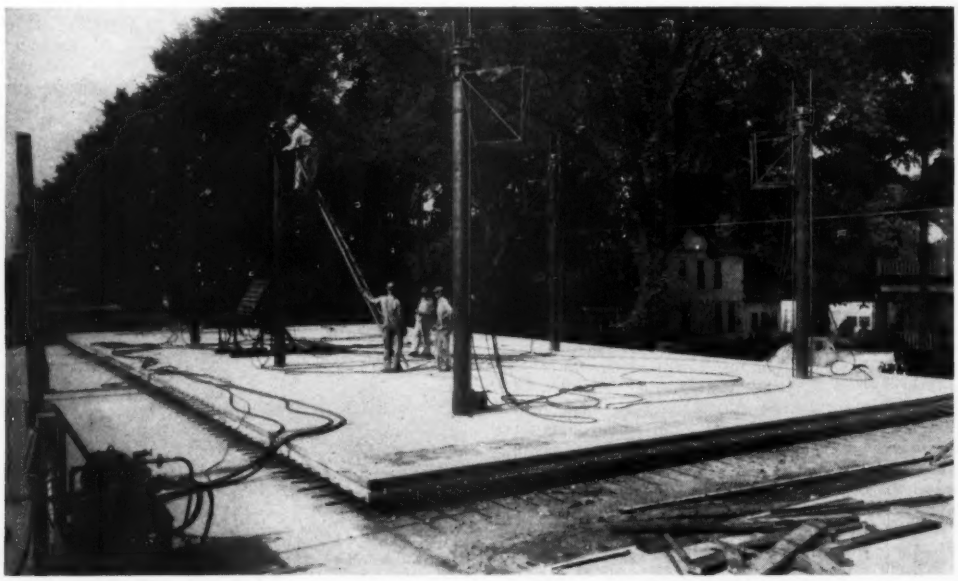
AFTER SLABS are in final position, lift castings are welded to columns and reinforced with steel collars. Welding takes 2 hr for each column. Later columns are encased in precast concrete sleeves as fireproofing.

hung from roof slabs, as hangers were readily spaced.

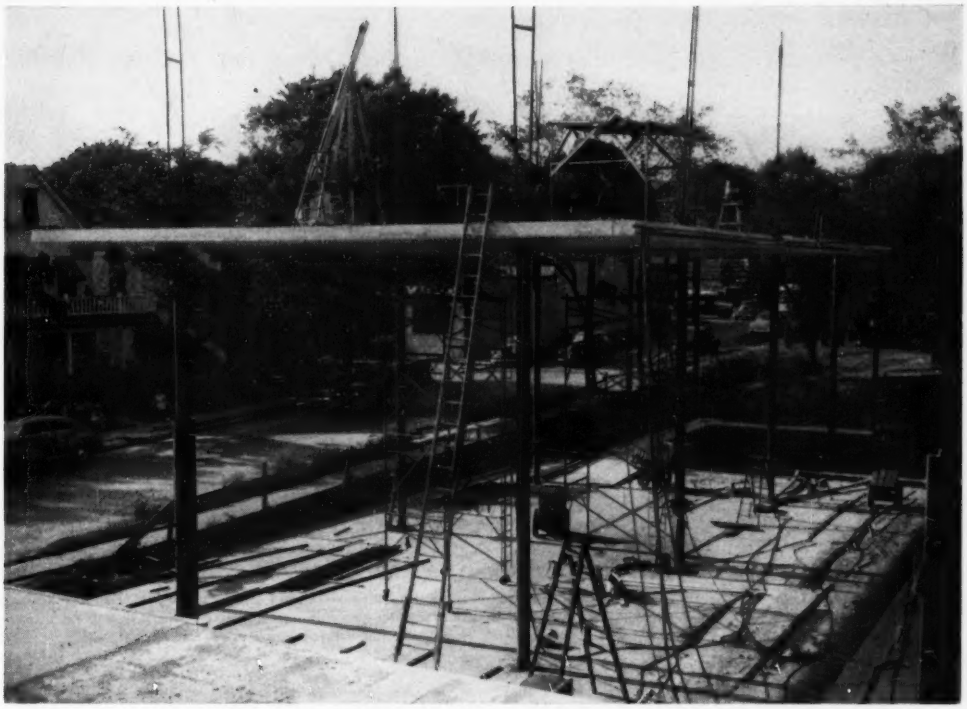
One big economy in this system is absence of forms. A simple 8-in. edge board, also serving as a screed guide, was all the form needed. Slab concrete was a 6-bag, 4-in. slump mix, given a float finish, except for the mezzanine floor. Test cylinders were taken, and when the strength reached 3,000 psi in 5 to 7 days, the slab was ready for lifting.

A special hydraulic jack assembly with 3-in. lift was set on top of each column in the lift area by a crane. These jacking assemblies carried two yokes, the lower one stationary, the upper one doing the lifting. Through these yokes were run two 1½-in. threaded jacking rods, fastened to the sleeves at bottom of slab casting.

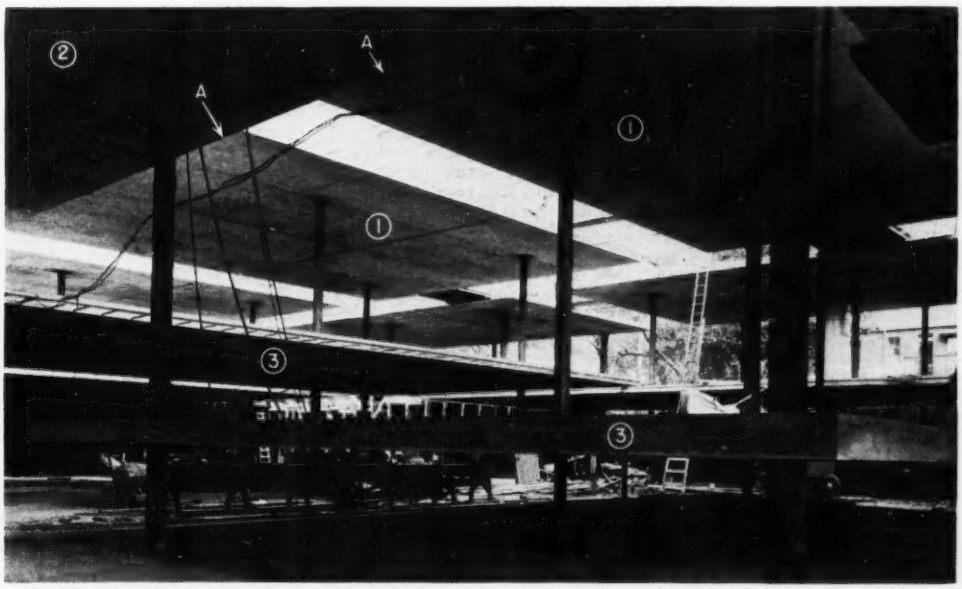
Above each yoke on each rod was a heavy nut, automatically kept turned down tight against the yoke by a low-powered hydraulic



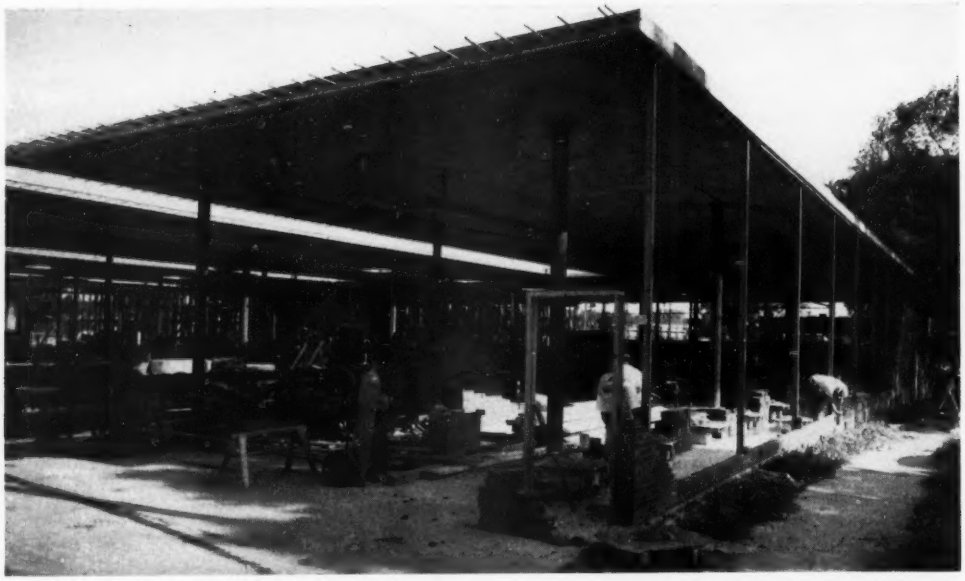
ON ITS WAY. Here jacks are in place on top of columns and slab raising has started. All jacking assemblies are checked after first 3-in. lift to make sure everything is in order. Motor-driven hydraulic pump is on ground at lower left. On slab in background is control panel that directs movement of each jack individually. Panel and control operator ride up with the slab.



ALL DONE. Section of roof slab is in final position here, and castings have been welded to columns. Another roof slab section is ready for pour on ground floor in background. Jinniwink crane on slab handles jacking rods.



LOOKS COMPLICATED but it isn't. Line **A-A** marks junction between 15-ft main factory room at left and 22-ft high roof and mezzanine section at right. Because cantilevered ends of slabs at junction line overlap, slabs here had to be poured and lifted in this order: **(1)** High roof slabs; **(2)** low roof slabs; **(3)** mezzanine slabs. Mezzanine slab in lower foreground is being lifted to place.



BECAUSE SLAB LIFTING takes so little time, interior work and building of outside walls can proceed quickly. Vertical struts in outside wall are stiffening angles for lateral support. Gaps between lifted slab sections are filled in by conventional methods—a simple flat form is blocked up against opening from below. Slabs in place make nice runways for concrete buggies.

motor. Thus, during a lift the nuts on the lower yoke acted as a safety measure against hydraulic failure, and also held the load while the jack was being retracted for a new 3-in. lift. Likewise, the top nuts followed the top yoke downward as the jack was retracted, always ready for a new lift.

Hydraulic power was supplied by a motor-driven pump on the ground. Control of jacking operations was through a central station that rode up with the slab. Indicators on this control board showed the progress of each jack, and as they could be controlled separately, it was easy to keep the slab level. At no time was a slab more than ¾ in. off level, and none was cracked during lifting.

Upon completion of a lift, the lifting castings were welded to the column, and the job was complete. A hoisting engineer and one or two millwrights comprised the entire lifting crew. Slabs were raised 15 ft in 5 hr, to 22 ft in 8 hr.

For the high roof and mezzanine section, the high roof slab was poured first and lifted, then the low roof slab was poured and lifted, and finally, the mezzanine floor was poured and raised.

Pour strips, to join the lifted slabs when they were in final position, were formed and poured in conventional manner. The working cycle for a section of the building above ground floor was two weeks. At the end of this period, the area was completely free for other trades to move in. This, translated into working time, represents considerable savings in speed of construction.

Groundwork Saves Labor

Labor costs of placing steel and concrete showed about one-third saving under comparable unit prices in this area because all work was done on the ground, with less material handling cost and greater efficiency of labor. Greater supervisory control by foremen, superintendents, and inspectors was maintained, as operations were visible at all times.

The ease of cold weather protection of slabs while curing on the ground is self-evident. When slabs were in place, the floor working area was protected from the elements, thus minimizing lost time due to bad weather. The elimination of forms and shoring cut the accident rate substantially, as also did the absence of scaffolds and runways above the ground.

The exterior walls are of two-course brick, and, being independent of columns, uninterrupted brick laying operations were possible and labor production noticeably stepped up.

Columns were fireproofed by encasing with 2-in. precast semicircular, lightweight concrete collars. These also improve the appearance of the interior of the building. The texture of the exposed concrete ceilings reflected the smooth, fine finish of the troweled floor slab and showed no blemishes which sometimes appear even with the use of plywood or lined forms. In office areas, acoustical tile was applied directly to concrete ceiling. Roof construction is flat with interior drains, 1-in. Celotex rigid insulation board and 4-ply T & G roofing.

The over-all savings on this particular job were estimated to be approximately 65c per sq ft, as compared to conventional methods of comparable design.

The general contract was held by Long Construction Co., with Harry Rand as superintendent and William Powell as assistant. Robert W. Long heads up the Skyhook Division, Carl Forsythe is chief engineer, and James J. Mennis is engineer.

Architects: Kivett & Myers, and Angus McCallum, Associate; structural engineer: Pfuhl & Shideler; mechanical engineer: W. L. Cassel, all of Kansas City.

Tractor-dozer pushes rock off barge in among pile clumps to . . .

Assist Missouri River Channel Cutting

Bucyrus-Erie photos

BIG ROCK for river revetments is rough going, but the angling Bucyrus-Erie Bullgrader on this International TD-9 sweeps the boulders overboard as the tractor maintains a safe footing.

THE RESTLESS Missouri River has given its human "civilizers" plenty of headaches since the River and Harbor Act of 1912 authorized construction of a navigable channel from Kansas City to its mouth. Original orders called for a channel 6 ft deep and 200 ft wide. In 1927 the project was enlarged to provide a channel 9 ft deep and 300 ft wide from Sioux City, Iowa.

The desired channel usually is obtained by diverting numerous small and shallow channels of the natural river bed into one fixed channel. This is done by shaping river flow into smooth and easy bends with systems of dikes.

Concentrating the energy of flowing water by concave bends under control scours a channel of the dimensions specified. Erosion of the river bank along these bends is prevented by clump dikes of wood piles buttressed with rock revetments.

Out of $91,000,000 appropriated to the Corps of Engineers for basin development on the Missouri in this fiscal year, some $4,000,000 is earmarked for dike, revetment and some incidental work between Sioux City and Kansas City.

River maintenace and repair work of this kind is done under contract for the Engineers. One of the contractors is the Cunningham-Kiewit Co., Omaha.

(Continued on next page)

TRUCK DELIVERY by an International rear-dump brings rock directly aboard a barge tied to the shore. Quarry is 17 mi away; steady truck shuttle is required.

Its crews operate along the river between Omaha and the Missouri State line, solving new channel maintenace problems almost daily.

A typical situation arose when the river broke through its dikes and washed out a deep cut in the bank about 8 to 10 mi south of Omaha last fall. Operating from a loading point at Bellevue, Neb., Cunningham-Kiewit crews drove a pile-clump revetment across the mouth of the cut and constructed baffle dikes of pile clumps across the current in the cut.

The dikes consist of two or three rows of pile clumps, connected by pile stringers and anchored to the bank by a root structure. Three-pile clumps are driven 20 to 30 ft below the river bed in tripod fashion, 15 or 18 ft apart in each row.

They are lashed together at the top with wire cable and the stringer is lashed between the rows 3 to 5 ft below the top of the clumps. In this case, the mattress of lumber or willow which usually is sunk to the river bed with stone was omitted, and the clumps were stabilized with rock dumped around their bases.

The current, retarded as it flows through the open clumps, deposits sediment downstream from each dike. The deposit is built higher with each succeeding high water until new banks are formed.

In this particular operation, two barges of approximately 26x100 ft were used to haul rock from the loading point to the scene of the break-through to stabilize the pile clumps. One barge was pushed upstream by two tugs to the dumping site, while the other was loaded. Since the work was done in November, heavy floes of ice piling up against the snub-nosed barges made the use of two tugs imperative.

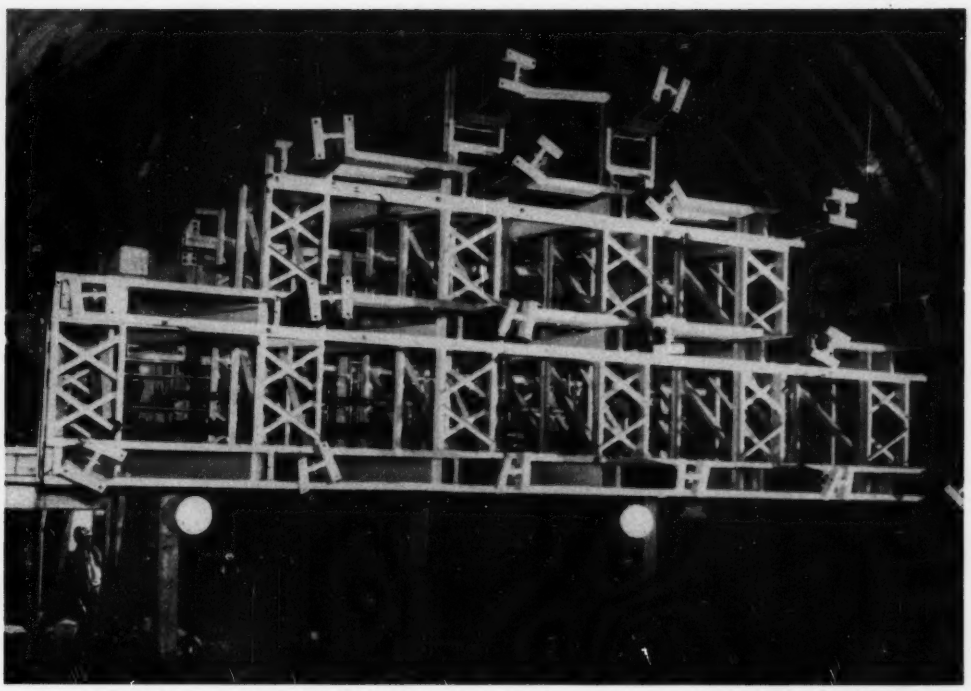
Dozer Unloading

On the rock-laden barge, a Bucyrus-Erie hydraulic Bullgrader on an International TD-9 tractor was used to push 8 to 14 tons of rock per foot among the previously driven pile clumps. The operator points out that this equipment is well suited for the unusual application because it is small enough to maneuver easily on the limited area of the barge, yet sturdy enough to stand up under the rigors of rock work.

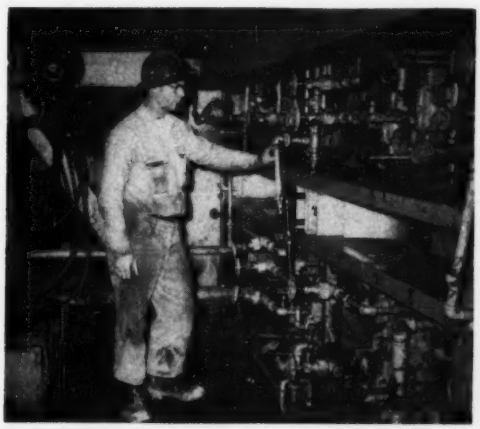
In addition, the wide blade and its angling feature (angles 25 deg to either side) permits the tractor to work safely within the confines of the narrow barge, while reaching out to get rock near the edges. In this manner, the blade is pushing across the barge almost parallel to the long side (dumping side), while the tractor is working diagonally across the barge to insure safe footing.

The job functions smoothly with a minimum of machine down-time because on returning to the dock, the unloading barge is warped alongside the loaded one and the tractor moved to the loaded barge for the next trip. One tug pulls out the loaded barge, while the other tug spots the empty. Then, the two collaborate to push the load upstream on another circuit.

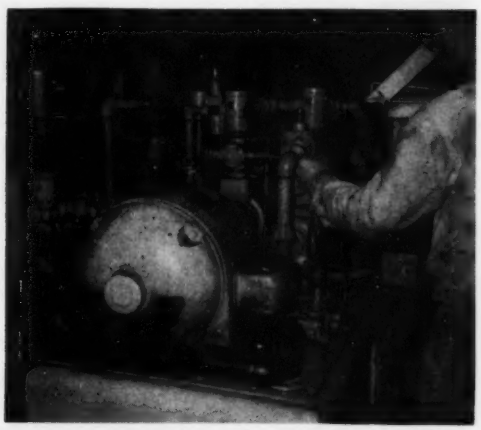
TRACTOR "JUMPS" from empty barge to deck of loaded one while they are lashed broadside. Barges measure 26x100 ft, require two tugs to push them upstream against ice floes.



EIGHTEEN HYDRAULIC RAMS on front of rail-mounted jumbo will hold breast boards against face of San Francisco tunnel to prevent ground from caving. Individually controlled, 50-ton capacity rams can be drawn back one or two at a time for face excavation.



JUMBO OPERATOR on lower deck in rig manipulates jack rams as directed by shift foreman who communicates via intercom system.

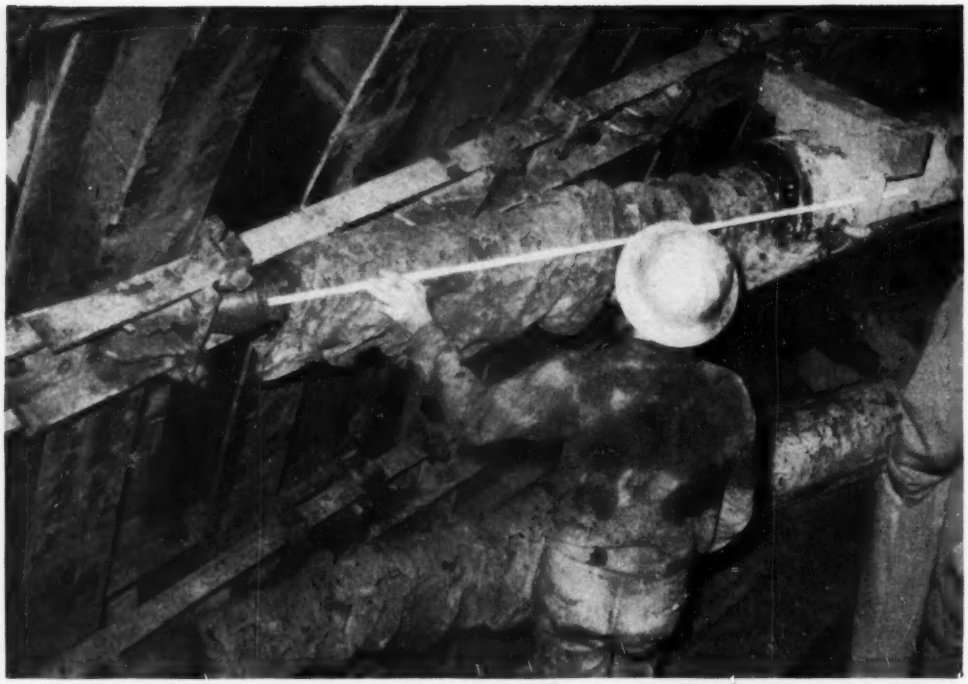


ELECTRIC PUMPS developing 500 and 1,250 psi power the rams. Emergency hand pump can hold pressure in case of power failure.

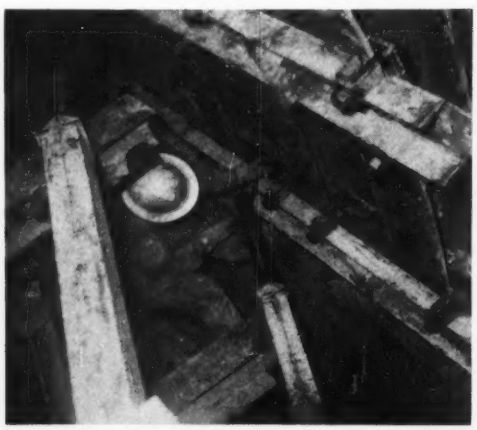
Breast-Board Jumbo Supports Caving Tunnel Face

By L. L. WISE, Associate Editor

WITH A NEW-TYPE JUMBO that acts somewhat like a tunnel shield to prevent caving of the face, Morrison-Knudsen Co. is taming a tough tunneling job beneath San Francisco's Russian Hill. The big unit mounts 18 hydraulic rams that push breast boards against the tunnel face to hold loose, rock-



FOUR HYDRAULIC RAMS, two at each side of rear of jumbo, push against brackets bolted to tunnel ribs to resist thrust of face rams and to inch rig ahead, as heading is advanced. Here, workman checks ram extension before moving ram up to next bracket.



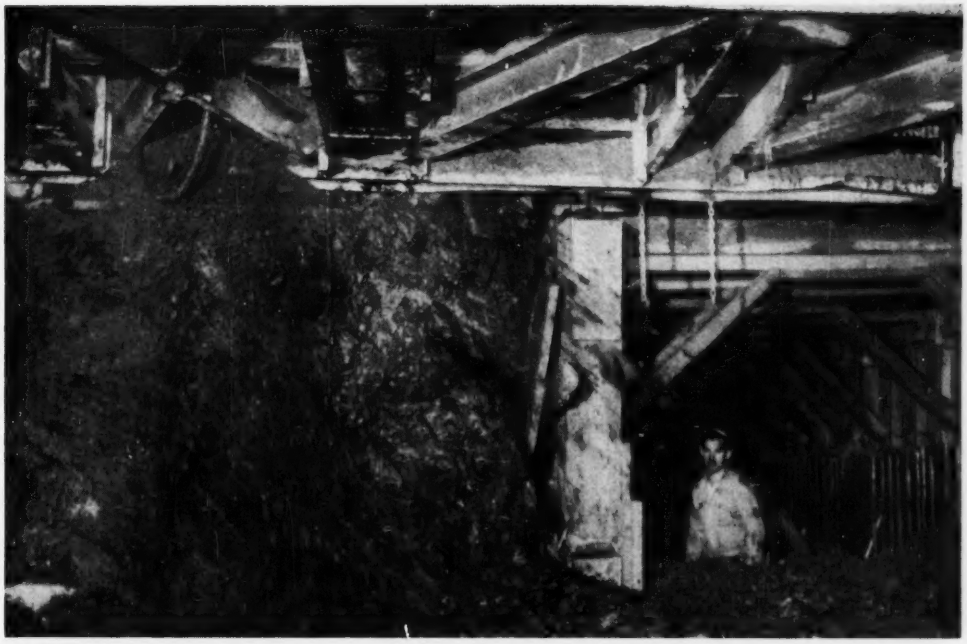
SCREW JACKS, extended manually to hold jumbo while hydraulic rams are shifted to next bracket, also anchor rig when power is off.

AIR SPADE cuts face, with miner on planks between two retracted rams that will again be pushed to face for excavation below.

filled ground. Excavation is carried on ahead as the rams are carefully retracted one or two at a time. These are again pushed against the face while steel arch ribs are being set or while other rams are withdrawn for further mining.

Actually two tunnels, the twin-bore Broadway Tunnel will speed vehicular traffic between downtown San Francisco and the north-central residential area. The 28½-ft-wide and 22¾-ft high (net) tubes are 67 ft center-to-center and 1,616 ft portal-to-portal.

A $5,253,552 construction contract was awarded Morrison-Knudsen Co., Inc., early in 1950. The contractor originally hoped to excavate the full face of the tunnels with a power shovel (never before done in San Francisco), but the bad ground with its tendency to cave dictated more positive face support while mining. Accordingly, M-K officials devised the breast-board jumbo which was built for



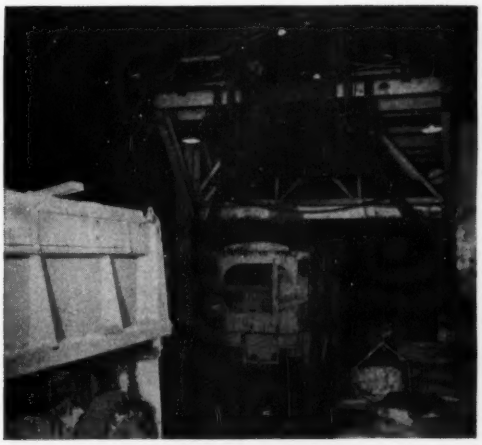
FOOT-BLOCK DRIFT—one of which was driven on each side to cast footings for arch ribs before full-face operations—extends ahead of breast-board jumbo. This view, from beneath jumbo, shows excavated material from face cascading down to floor of tunnel.

them by the Noble Co., construction equipment manufacturers of Oakland, Calif.

First tunneling step after the necessary portal construction was to drive smaller foot-block drifts at the lower corners of each tunnel. Due to the small size of these drifts, caving was not as serious a problem as on the larger tunnels. Of course, very heavy timbering was necessary—the 12x14-ft gross size being reduced to 9x12 ft net in the process.

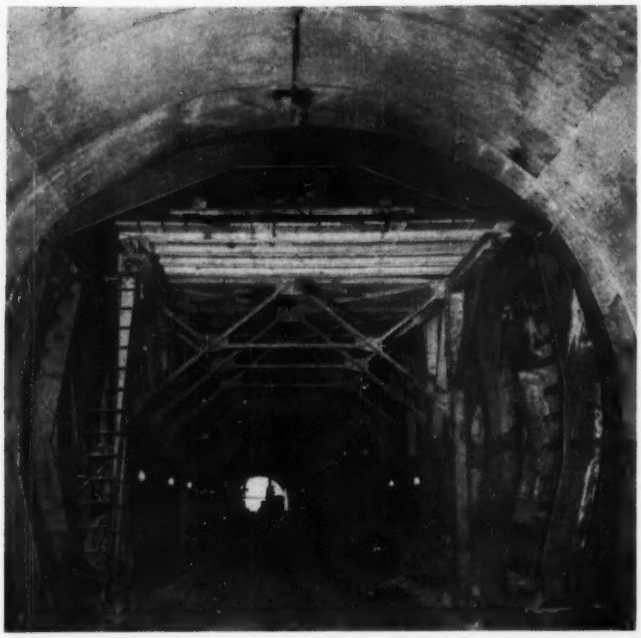
In the foot-block tunnels, footings were cast for later support of 10-in. WF steel arch ribs installed as the full-face excavation proceeds. Pumpcrete machines placed concrete for the footings—generally 4 1/2x2 1/3 ft in cross-section. The drifts represented about 41% of the net area of the full tunnel.

There was some delay in full-face excavation pending design and construction of the breast-board jumbo. And even when it



MUCKING EQUIPMENT includes Eimco loader under breast-board jumbo, and Mack trucks, all fitted with diesel exhaust scrubbers.

RADIAL SAW is mounted on jumbo's deck to cut blocking, as needed. Jumbo also carries air tugger hoist to help set rib steel.



TELESCOPIC FORMS 44 ft long are moved by hydraulically operated traveler. Consolidated Western Steel Corp. made two sets of 45-ton forms and one 14-ton traveler for M-K.

was in full use, progress was relatively slow due to the nature of the ground—a 10- to 14-ft-per-day advance was average. And this was on a three-shift basis.

As noted, the rail-mounted breast-board jumbo resists face caving by means of hydraulic rams thrust against the face. Thrust of these rams is resisted by four other rams on the jumbo pushing back against brackets bolted to the steel tunnel ribs. These latter jacks also propel the jumbo forward, as necessary. Advancing the jumbo is perhaps the most ticklish operation in the entire job. Its front rams have to be released from the face enough to allow forward movement of the entire rig, but not enough to allow caving.

All rams have locking devices so they can be fixed in place in the event of a power failure or when the job is shut down over a weekend.

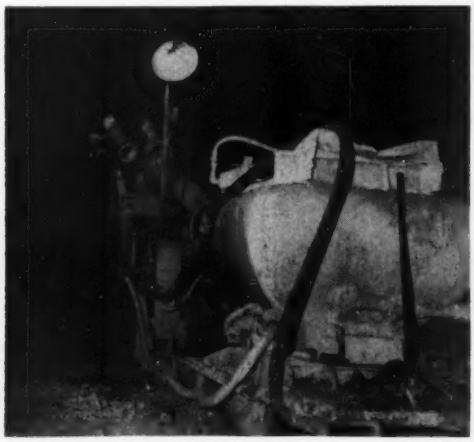
To permit moving the backward thrusting rams forward to a new set of brackets, four screw-type jacks are fitted to the jumbo. These take the load while the hydraulic rams are moved, and also act as a safety factor during shut-down periods.

All hydraulic jacks are 50-ton capacity and were made by the Noble Co. A two-stage hydraulic system on the jumbo powers all 22 rams. It includes a 500-psi low pressure pump and a 1,250-psi high pressure pump, switching from one to the other being automatic.

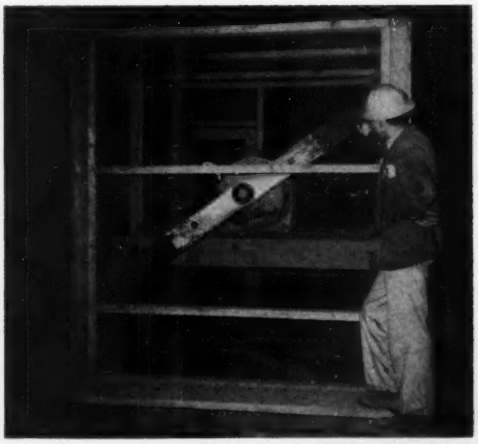
Tunnel excavation is mostly by Ingersoll-Rand pneumatic spades, although there is some minor drilling with jack-leg drills for blasting. All air for the job comes from three 850-cfm I-R compressors, in a central station. An Eimco 104 mucker working under the breast-board jumbo loads spoil into Mack trucks for disposal.

The project is under the jurisdiction of the San Francisco Department of Public Works, S. P. Duckel, public works director. Design was directed by Ralph Wadsworth, city engineer. George Partridge is resident engineer.

L. L. Wheeler is project manager for the contractor, Morrison-Knudsen Co., Inc.



LINING CONCRETE is blown to forms by two of these Pressweld pneumatic placers. Jumbo beneath forms carries delivery pipes.



75-HP FAN with airplane prop lets transit mixers without exhaust scrubbers work in bore. Two such fans move 350 cfm of air.

CLUSTERS OF DRILLED CAISSONS, containing up to 12 shafts each, necessitate some close spacing of holes. Note two holes flanking rear wheel of drill truck, while third shaft is being bored by bucket drill. Drilling and concreting were done in tight formation to save time and to keep moves of rigs to a minimum. Finshed shafts have belled footings.

Bucket-Type Drills Beat the Weather on Big Building Foundation

By GEORGE REBER and RAY DAY
California Welding & Blacksmith Shop, Inc.

UNUSUAL SPEED by Casey & Case Foundation Co. of Detroit and Los Angeles helped set the pace for construction of the huge 1½-million sq ft Army Finance Center at Fort Benjamin Harrison, Ind. Despite clay, ground water and adverse foundation conditions, 6,550 drilled shafts for concrete piles were completed for the support of the building in only 3½ months in the fall and winter of 1951.

The drilled shafts were 16 in. in dia and from 18 to 27 ft deep, with belled footings.

Construction of the finance center was let by the Chicago District of the Corps of Engineers in three contracts. This brought in specialty contractors for some of the important early phases of the project.

Preliminary grading and earthwork went to Calumet Paving Co. at a contract price of $426,400. The Casey & Case contract amounted to $377,962 and included 6,671 drilled caissons with concrete placed to the bottom of the pile cap.

The third and main contract, for $14,383,200, is for construction of the main building, boiler house, and parking areas. It is held by a joint-venture firm composed of Sherry-Richards Co., Wilcox Construction Co., Inc., Corbetta Construction Co., Inc., and James McHugh Construction Co.

The main structure will be a 3-story building 996 ft long and 612 ft wide, of reinforced concrete and brick construction. Of special interest is the foundation, as the overburden above solid limestone all over the building site was too deep to attempt to reach rock.

Clusters of 16-in. drilled caissons, containing from one to 12 shafts per cluster, were designed to support the caps and weight of the building. Possible lateral support between earth and shafts is not regarded in the over-all design. The foundation caissons and piles would carry the weight of the building even though theoretically the intervening dirt was removed.

Overburden ran the full range of a typical Indiana glaciated deposit. It included clay, sandy clay, silt and clay impregnated with gravel.

The concrete in the drilled caissons was designed for a 28-day strength of 4,500 lb. Each pile was

CASING IS REMOVED by drill rig as transit-mix truck fills shaft close on the heels of drilling. Casing was not necessary for most holes, but as the weather grew worse, the water table in the area rose and construction of foundation piles became increasingly difficult. In the background, further above-ground foundation concreting follows the drill trucks.

planned to carry a load of 40 tons without settling more than .01 in. per ton of test load. Ten piles test-loaded to 80 tons deflected only .1 in., and they rebounded part way when the load was removed.

When Casey & Case arrived on the site late in August, an unfavorable part of the construction season was rapidly approaching. Foundation specialists realized that fall rains might raise the already high water table and turn the area into a mudhole. It was a job for fast, high-capacity drilling equipment. Casey & Case brought in seven Calweld truck-mounted bucket-type drills. Included were five large-capacity units and two smaller models. These machines had a long journey, as they are manufactured in Los Angeles by the California Welding & Blacksmith Shop, Inc. Later, three Williams auger-type earth-boring machines, also truck-mounted, came in to round out the operation.

Production Line Setup

Army survey parties located the position of each caisson accurately by setting a stake at the center of each drilled pile. A fast production

DUMPING THE LOAD brought up by a bucket drill is a simple operation. Helper pulls loaded bucket to side of hole, and hand tripper opens hinged bottom to discharge dirt.

ROCK BUCKET (similar to this one working in California) removes stone up to 7 in. Belling bucket (on the ground) and extra drill stems are carried on the truck.

DRILL RIGS WORK IN PAIRS to speed job. Williams auger drill at right starts holes, Calweld bucket drill finishes and bells shaft. Sonotube forms are used to continue piers above ground.

line of equipment was then set up to drill as many holes as possible each work shift. After a short trial period, methods were developed which produced up to 72 finished holes per machine per shift. The usual plan consisted of using the three Williams auger-type machines for the initial top boring and then completing the drilling, baling, belling and casing, as needed, with the Calweld bucket-type rigs.

In Tight Formation

Closely spaced caisson clusters complicated operating conditions, and drilling had to be done in such a way that the ground was not disturbed. The Calweld machines have sufficient power to drill a clean, firm hole and bell, however, so, with a few minor exceptions, the work was handled without too much trouble. Ground water which showed up had to be handled by pumping the caissons dry just before concrete was poured into the holes. Often ground water came up to within a few feet of the ground surface overnight.

In general, the best drilling scheme consisted of working one auger and one bucket-type machine together, keeping the extra bucket-type rigs in reserve for tough holes and baling. When the auger machine finished its initial drilling, the other rig took over to finish the hole while the first machine moved ahead to the next.

After the bucket-type drill completed the bottom of a hole, crews followed closely to pour the concrete. Work was kept on a tight schedule wherever possible at all times, and even the drills operated in tight formation to keep moves down as much as possible.

When the fall rains came, most of the holes in low spots were finished and out of danger. True to predictions, the first rains turned the area into a quagmire, and from that point on through December it was a discouraging and brutal construction job. Two small crawler tractors helped the drills move around through the mud and, in spite of about 6 in. of the stuff, drilling went on about as fast as it did in dry weather.

The Fort Benjamin Harrison project is one of the first in the East where bucket-type drills have been used with such remarkable success. (See also page 46, CONSTRUCTION METHODS AND EQUIPMENT, January 1949.) Developed originally as a cesspool digging tool, the Calweld drill later was perfected to drill foundation holes, water wells, pier holes and mineral exploration shafts.

All concrete for the drilled holes came from the Heston Concrete Co., near Indianapolis. Truck-mixers brought in the material. Many of the piles had to be formed a few feet above ground. This was done easily by using 16-in. Sonotubes, setting them in place at ground level when the concrete reached that point, and continuing to pour to grade. The paper-built Sonotubes proved extremely valuable when severe winter weather arrived in December for, in addition to forming strength, they also had good insulating value against low temperatures.

Speed Beat the Weather

By December 15, only 3½ months after the first hole was drilled on August 31, Casey & Case had the job 98% completed and were out of the way so the contractors could go ahead with the main building construction. A foundation design on paper had been changed speedily into finished concrete piers, in spite of bad weather.

Colonel J. P. Campbell is District Engineer for the Corps of Engineers, and all operations are under his general supervision. Engineering design was handled by Harley, Ellington & Day, Detroit architects.

AIR VIEW of the completed Morgantown Dam and Lock on the Monongahela River, constructed to improve navigation. Lock measures 600x84 ft. and raises or lowers river vessels through a 17-ft. pool differential established by the dam.

Lock Gates Installed in the Wet

By W. L. HORSTMAN

Engineer, The Contracting Division, Dravo Corp.

INSTALLATION of two 90-ton gate leaves for the new Morgantown Lock and Dam on the Monongahela River near Morgantown, W. Va., involved a precise engineering operation that called for the use of two derrick boats working in unison.

Job scheduling and the time element forced the decision to place the lock gates with floating equipment after flooding the completed lock. The time necessary to assemble and adjust the partially fabricated gate leaves in a dry installation would have delayed the rest of the job. Water installation of the complete gate would keep this delay to a minimum and postpone adjustment of the gates to a less critical time, even at expense of additional cofferdamming.

INSIDE FLOODED LOCK two derrick boats team up to place one of the heavy gate leaves. A special equalizer and spreader beam is used to lift the gates from delivery barges.

The new lock and dam, built by the Contracting Division of Dravo Corp., is part of the Army Corps of Engineers' navigational development program for the Monongahela River, a vital traffic artery for transporting huge tonnages of coal from mines to steel mills and other industries in the West Virginia and western Pennsylvania area. The new 84x600-ft. lock chamber handles riverboats through a 17-ft. pool differential established by the dam.

Lock gates were fabricated of structural steel by Dravo's Engineering Works Division at Pittsburgh and barged some 115 mi. to the project site at Morgantown. Each of the two downstream gate leaves weighs 93 tons, and the upstream leaves scale 54 tons apiece.

Combined capacity of the U. S.

Engineers' 50-ton (rated capacity) derrick boat, *Monallo*, and a 40-ton (rated capacity) Dravo derrick boat was used to lift the gates from the barges. After the derrick boats had lifted a leaf, they were towed into the lock. The leaf then was lowered so the pintle casting on the gate engaged a submerged pintle that had been installed when the lock chamber was built.

Temporary Bulkhead

The top of each leaf was secured with anchor bars to the gate anchorages embedded in the lock wall. This was done with wedge pins, whose vertical adjustment was used later to plumb the gate.

Because the gate leaves were placed in position after the cofferdam containing the lock construction had been removed, it was necessary to dewater the lock chamber to adjust the gates and their water seals.

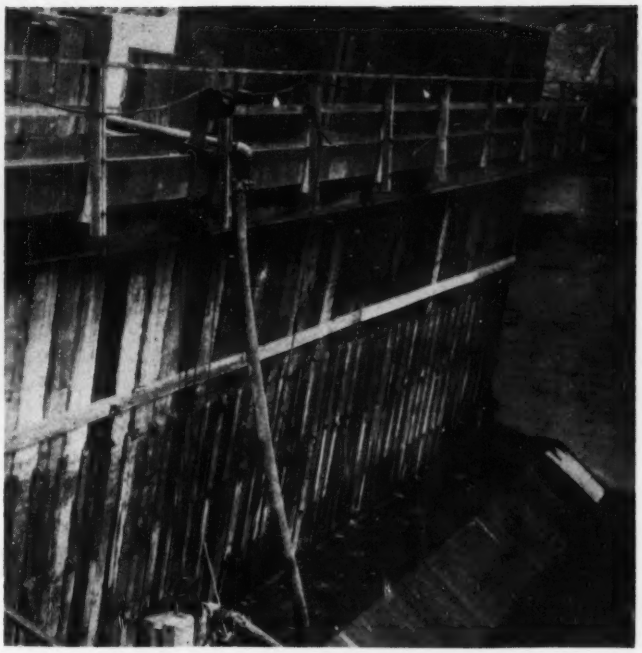
This was accomplished by constructing a temporary watertight bulkhead, consisting of two horizontal 36-in. steel beams spanning the upstream end of the lock chamber with 12x12-in. vertical timber "needles" bearing against them. Three steel sheet-pile cells were built across the downstream end of the chamber. The lock chamber then was unwatered by pumping.

Metal-to-Metal Seals

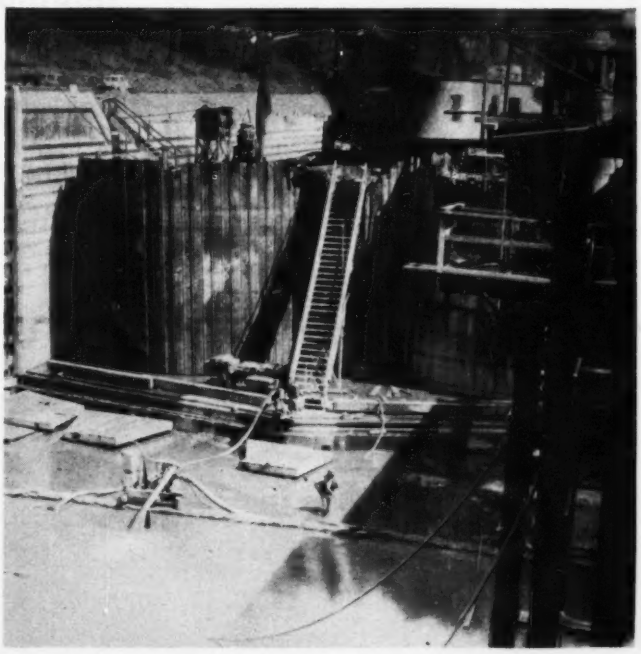
Vertical seals for the lock gates are metal-to-metal instead of timber seals. The gates were adjusted to a level and plumb position by using the diagonal bars constructed into each leaf and the adjustable anchor bars at the top of the lock wall.

When the gates were built, the vertical metal seals were arranged to be movable horizontally from a main structural member. After the gates were positioned accurately, the vertical metal seals were adjusted by cap screws until a minimum clearance remained between all sealing surfaces. Then molten zinc was poured between the gate seals and the adjoining gate members to secure the seals.

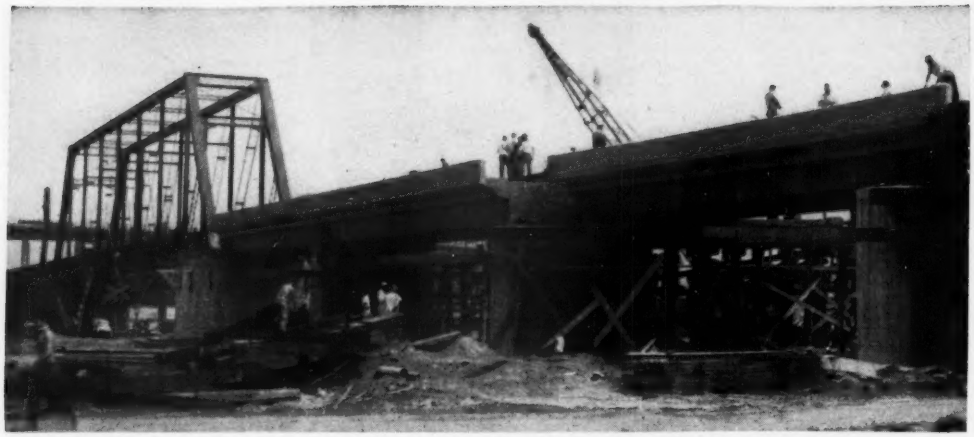
All that remained to complete the installation was the mechanical connection between the gate and its hydraulic oil piston. The hydraulic system that operates both lock gates and the butterfly watering and dewatering valves works with an oil pressure of 800 psi. Electric pumps in the lock's operations building provide the pressure.



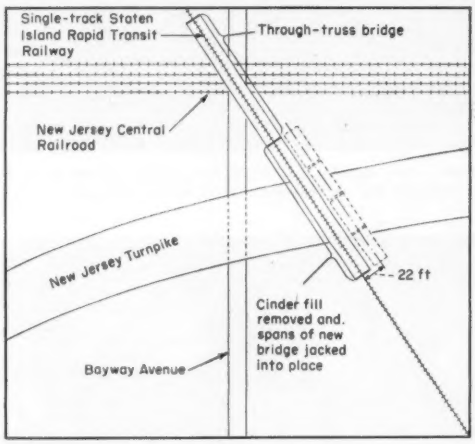
WATERTIGHT BULKHEAD at the upstream end of the lock permits unwatering of the chamber to adjust gates in the dry. Two steel beams and 12x12 vertical timbers did the trick.



STEEL SHEET-PILE CELLS form temporary bulkhead at downstream end of lock chamber. After gates are positioned accurately, vertical metal seals are adjusted by cap screws.



THROUGH TRUSS BRIDGE sets grade and alignment for new spans being jacked into place. Turnpike is at ground level.


Single-track Staten Island Rapid Transit Railway
Through-truss bridge
New Jersey Central Railroad
New Jersey Turnpike
22 ft
Cinder fill removed and spans of new bridge jacked into place
Bayway Avenue

SCHEMATIC DRAWING illustrates graphically how embankment was removed, new bridge constructed and brought into proper alignment with existing span—without disrupting train schedules.

Trains Keep Running as Bridge Replaces Embankment

By M. D. MORRIS

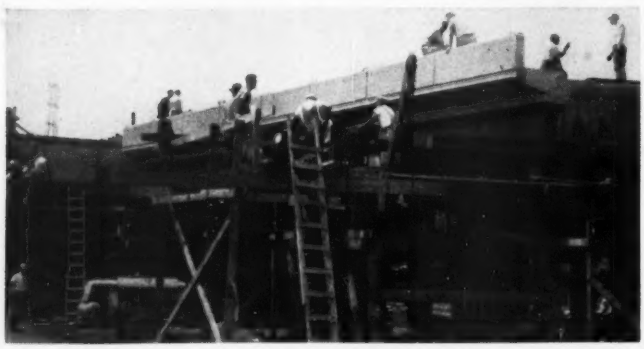
CONSTRUCTION KNOW-HOW recently performed some sleight-of-hand when the Poirier & McLane Corp. removed a railroad embankment 275 ft long and 20 ft high and replaced it with a reinforced concrete bridge—all done without disrupting train schedules on the single-track line across the embankment!

The right-of-way of the New Jersey Turnpike crosses the single-track Staten Island Rapid Transit Railway at Elizabeth. This is at a point where the railroad runs over a 20-ft cinder fill—to elevate the roadbed sufficiently for connection with a through-truss bridge that crosses diagonally over the four-track New Jersey Central R.R.

The cinder fill had to be removed and a bridge constructed to line up with the existing truss and carry the railroad across the new turnpike. There was one major stipulation: Train schedules on the SIRT could not be delayed; the longest free time over this spot was seven consecutive hours during the daytime. And a temporary relocation of the track was precluded by the location of the existing truss.

First, the contractor drove 36 H-piles of 25-tons bearing capacity,

(Continued on page 68)



AT EACH END of the new span, a 100-ton hydraulic jack with 12-in. stroke pushes the 230-ton permanent structure at 4 ft per hr. Wood beams increase length of ram, as needed.

MACWHYTE

PREformed . . . Internally Lubricated

WIRE ROPE

for all equipment

From Macwhyte's complete line of a thousand and one sizes and types you get rope best suited to your equipment, designed, PREformed, and internally lubricated to provide long, safe service. (Catalog G-15.)

Wire Rope

SLINGS

for lifting and moving materials and equipment in production or maintenance.

There are hundreds of types and sizes of Macwhyte Flat-Braided, Round-Braided, Single-Part, and Grommet Slings. All are custom made in length, capacity, and flexibility to meet your needs. (Catalog S-8.)

Wire Rope

ASSEMBLIES

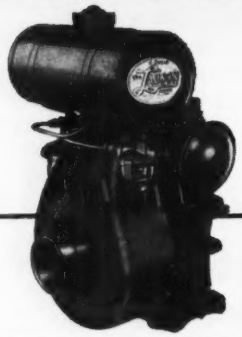
for machine parts, controls, and operating devices.

Macwhyte Safe-Lock wire rope assemblies are made to order in length, strength, and flexibility desired. Terminals are permanently attached to one or both ends. There are many standard types. (Catalog 5201.)

Macwhyte Company, 2941 Fourteenth Avenue, Kenosha, Wis. Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope and Wire Rope Assemblies. Mill depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.

Catalogs are available on request to Macwhyte Company or authorized distributor. 1016 SW

HORSE POWER!



Altho "dobbin" is getting a well-deserved rest on most of America's farms . . . his replacement, the gasoline engine must still be chosen with as much care as was formerly used in buying a horse. Passing every test for dependability, long life and thoroughbred construction . . . is the LAUSON engine . . . universally used on BETTER power equipment! LAUSON engineering has put cooler running into each engine . . . special cylinders . . . finer materials . . . EXTRA precision, all built into the motor for the most power for the longest time . . . and to insure trouble-free operation! Dealers find it easy to sell equipment powered by LAUSON . . . a widely advertised name for over 50 years.

BETTER POWER FOR GARDEN TRACTORS

LAUSON engines mean faster, easier starting . . . less servicing and smoother operation after long hours of work. Sell LAUSON for tractor power . . . investigate equipment powered by LAUSON!

A FAVORITE ON THE FARM!

LAUSON powered equipment is a favorite with hard-working farmers, whether it's a power mower . . . pump, saw, sprayer, snow plow or generator. For satisfied customers, feature LAUSON!

FOR CONSTRUCTION WORK

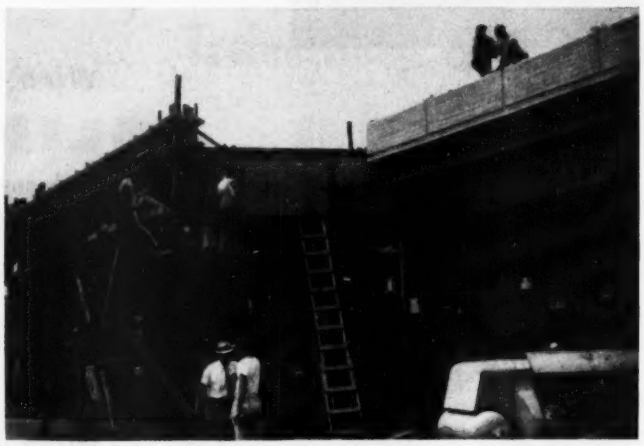
LAUSON engines are engineered for economy and easy maintenance . . . perfect for the rugged jobs needed in building or road laying.

For Details, Write:
THE LAUSON COMPANY
NEW HOLSTEIN, WIS.
Div. of
Hart Carter Co.
In Canada: Hart Emerson Co. Ltd., Winnipeg

4 CYCLE ENGINES
LAUSON
PORTABLE ENGINES — OUTBOARD MOTORS

N. J. RAILROAD BRIDGE . . . Continued from page 66

NEW SPAN nears permanent position. Beyond is temporary trestle on steel pile bents which links up with undisturbed embankment. Trestle was dismantled by burning off steel piles.



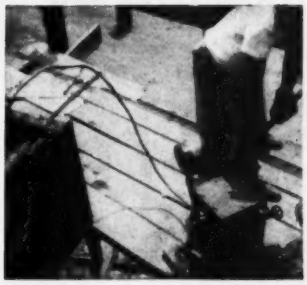
FORMS REMAIN on incomplete fourth span as the third one is jacked into place. Note timber piles supporting erection forms. Steel beams act as runners for finished span.

12 in. by 74 lb per ft, in pairs below grade on either side of the track, through the embankment where the bridge was to be placed. Rock was found about 30 ft below ground. Each pair of piles was capped with a 16-in. WF 88 lb per ft beam, thereby making a series of steel bents to support the track. The cinder fill then was removed and the pile bents braced with wood beams and steel angles.

Work on the turnpike could now proceed beneath the track, and formwork for the permanent structure was erected parallel to the existing line on 22-ft centerlines. In its erection position on wood piles, the permanent structure was above grade but pitched toward its eventual location so that it could be jacked into position, then dropped over the anchor bolts on permanent bents.

Four permanent spans were constructed, measuring 53 ft 6 in., 61 ft 8 in., 51 ft 8 in., and 58 ft 6 in. The odd lengths are to facilitate location of the permanent supports in the curvature and varying skew of the turnpike below. Each span of reinforced concrete on steel base with 36-in. stringers, complete with railroad ballast and ties, weighed an average of 230 tons.

Erection time per span was about a month, but they were staggered so that one would be completed and



HYDRAULIC JACK is actuated by manpower to ease new span on to reinforced concrete bents.

ready to move a day or two after its predecessor was in permanent position. Since it was most important to obtain alignment with the existing bridge, the section nearest the truss was finished first. Reinforced concrete bents were erected at the junction lines of the spans.

The day the first span was ready for positioning, that part of the temporary structure was dismantled immediately following the passage of the morning train. The steel bearing piles were burned off at ground level. Each span was erected on two 14-in., 89-lb-per-ft beams which now acted as runners; those and the span bottom having been greased.

Two 100-ton 12-in. stroke hydraulic jacks, manufactured and rented by Richard Dudgeon, Inc., of Brooklyn, N. Y., were located between the welded kick-back ends of the runner beams and the structure. Jacking began simultaneously at both ends, and proceeded at a rate of 4 ft per hr.

As the structure moved away from the jack, 12x12-in. wood beams were used to increase the length of the ram. Rails were relaid as soon as the ties were close enough and finally spiked when the span was dropped over its anchor bolts and jockeyed into correct line and grade. This entire operation took a pat 7 hr so that the evening train passed on time.

Placing of the next three spans followed the same procedure without mishap; the last resting on the retaining wall from which the cinder fill continues. At grade, clearance for the turnpike is 17 ft.

Supervising for Ammann & Whitney, consulting engineers, was Nomer Gray; Buzz Jordan was superintendent for Poirier & McLane. Engineering and field personnel were Chris Henrichsen, Larry O'Neill and Jack Morgan.

ON ASPHALT and GRANULAR SOILS
This NEW VIBRATORY COMPACTOR
IS A
Sensational PERFORMER!

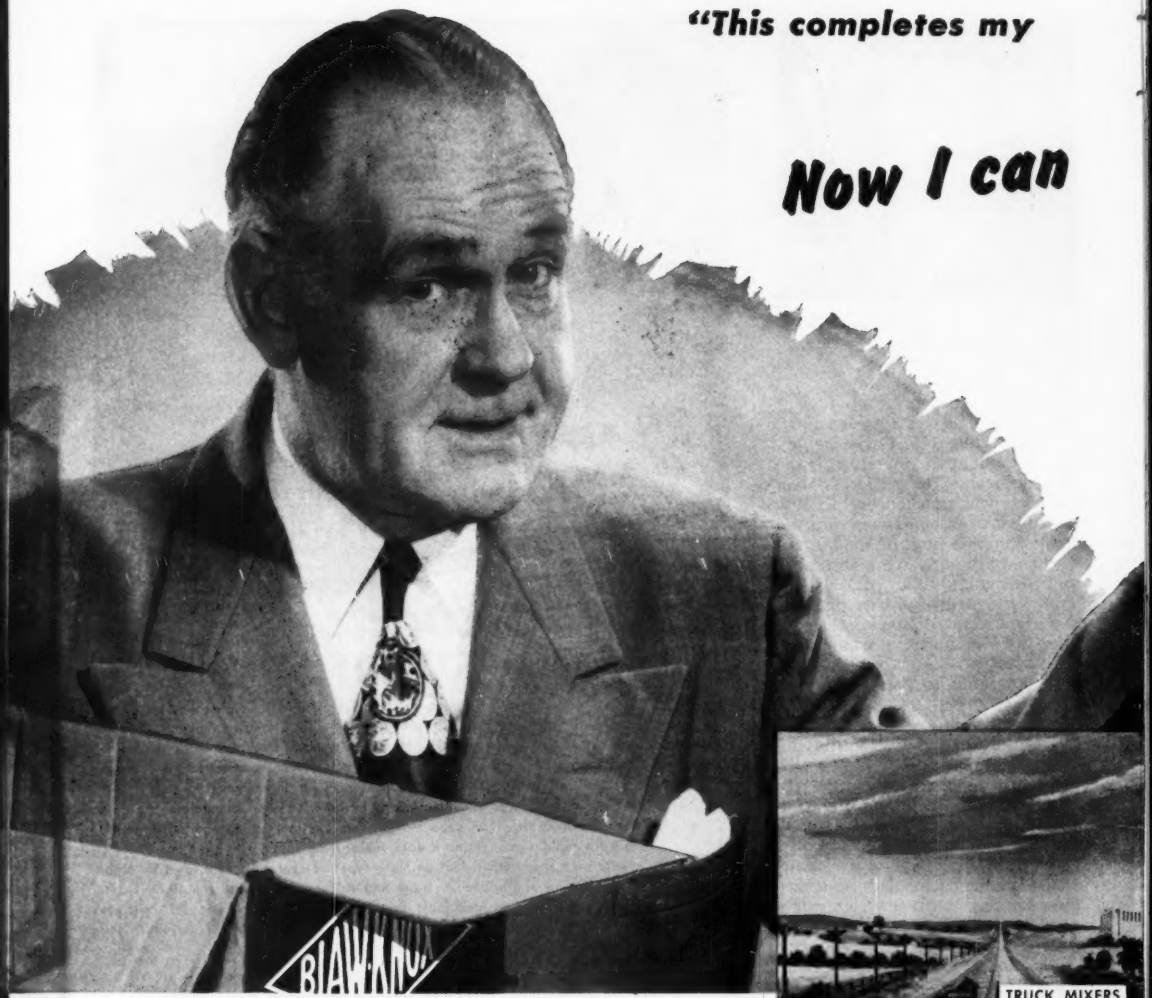
In spite of its small size, the Jackson Vibratory Compactor delivers up to 4500 1¾-ton blows per minute. It propels itself and will firmly compact 900 to 1200 sq. ft. per hour — closely approaching theoretical density of the asphaltic mix being used, or 95% of maximum density in the case of granular soils compaction. It operates on 3-phase, 110V. 60 cycle AC from a *Jackson Power Plant mounted on a trailer which also has means for quickly picking up or lowering the Compactor. The ease and speed with which it may be moved from one location to another, together with the rapid, thorough job it does, makes it far superior to more cumbersome and more costly equipment on many types of operation. It is ideal for highway patching and widening, walks and drives, water-bound macadam bases, railway platforms and crossings; for compaction of sub-bases for concrete floors, in trenches, near abutments and many other places. Let us furnish you with complete details. It's a great time and money saver.

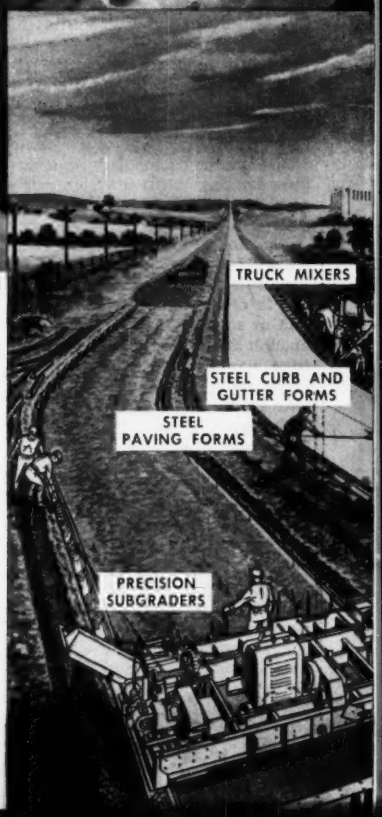
*Power Plant also generates single phase 110 V. 60 Cycle AC and may be used to operate other power tools and lights (Capacity: 2.5 KVA)

JACKSON VIBRATORS Inc.
LUDINGTON, MICHIGAN

"This completes my

Now I can





BLAW-KNOX Spreader-Vibrator and Finishing Machine working on Edens Expressway near Chicago. The vibrating pan on the Spreader assured proper densification throughout the slab, even though an exceptionally stiff mix of air-entrained concrete was specified. A finish tolerance of ⅛" in 10' was required. Other Blaw-Knox equipment in this "Complete Package" included Aggregate and Cement Batching Plants, Finishing Machines and Self-Aligning Steel Road Forms. MultiFoote Pavers placed the concrete.

BLAW-KNOX 'Package'... handle any concrete paving job!"

I'VE really increased the type of jobs I can handle by completing my Blaw-Knox "package" of concrete paving equipment, and so can you, to get ready for the big construction days ahead.

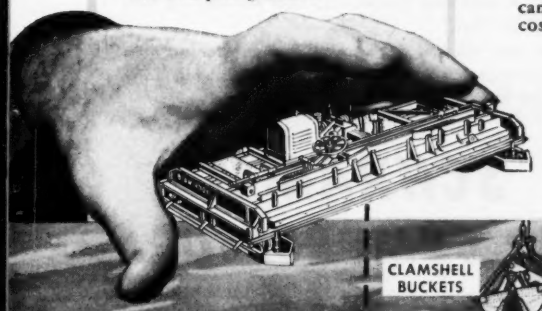
In the "Complete Package" you get *all* the equipment you need, from forms to finisher. You can use the entire set-up for the big jobs, or choose the units you need for whatever job comes up . . . roads, streets, airports, or even dams or bridges. And you can be sure of getting *all* the advantages of a "packaged" system . . . smooth, low-cost production-line operation, with each highly productive unit integrated with the others for big output at a steady, profitable pace.

You get a further profit pay-off in the *one-source* conveniences of a "Complete Package": . . . all your equipment from one responsible manufacturer vitally interested in your success, with only one financial contact, and backed by one construction-minded distributor organization working hand in glove with you to assure prompt, efficient service in parts and maintenance. One Blaw-Knox trained man can service *all* your "Complete Package" equipment! You can get the entire package on one order and in one shipment if you like, or choose the equipment you need *now*, then add the others as your needs increase.

Remember, when you have the Blaw-Knox "Complete Package", you can handle any concrete construction job faster, better and at the lower costs that assure profit.

BLAW-KNOX PAVING SPREADERS

Like the other equipment in the "Complete Package", Blaw-Knox Paving Spreaders are designed for record-smashing production and high quality performance. By using the vibratory pan attachment on the Spreader, exceptionally uniform, dense concrete free from difficult finishing problems, can be obtained. This 20-25-ft. adjustable spreader, with the automatic transverse blade, can handle the maximum output of two 34-E paving mixers.



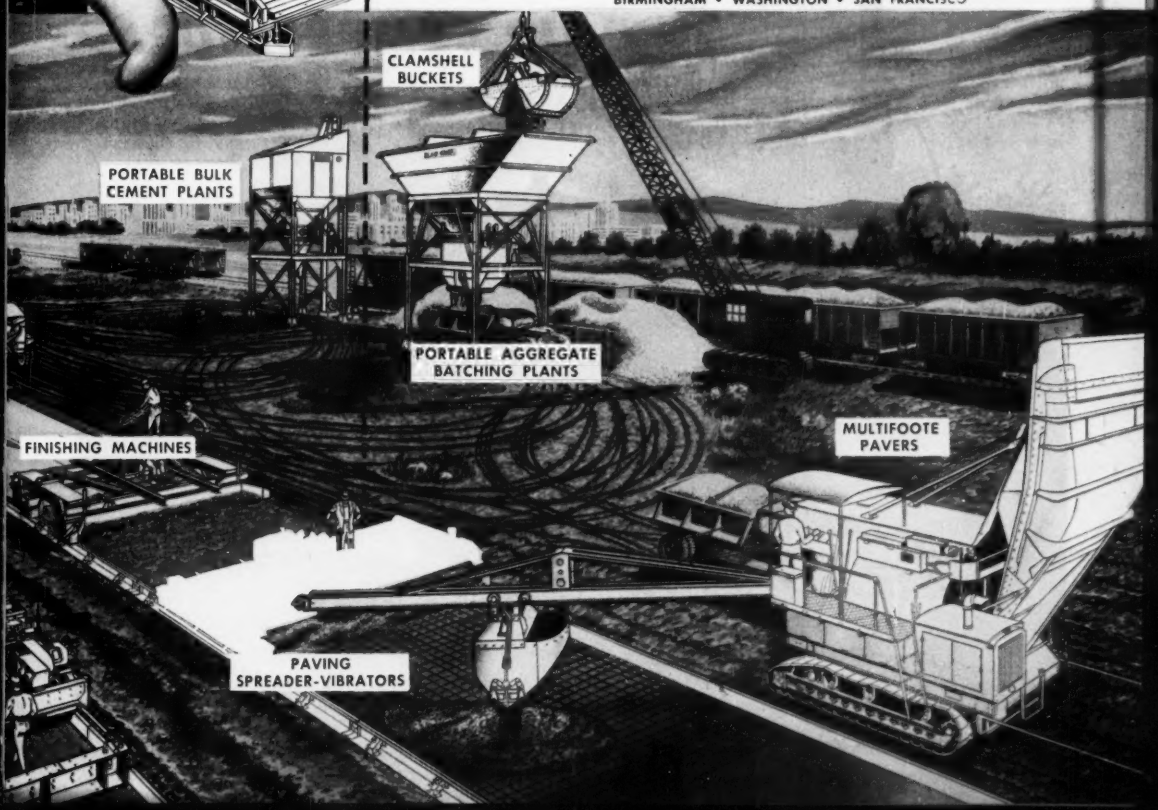
BLAW-KNOX

BLAW-KNOX DIVISION of Blaw-Knox Company

Farmers Bank Bldg. • Pittsburgh 22, Pa.

NEW YORK • CHICAGO • PHILADELPHIA

BIRMINGHAM • WASHINGTON • SAN FRANCISCO



How Stake Driving Progress was Stepped-Up 300% on the New Jersey Turnpike

The Job: installing 8,500 Stimsonite delineators to facilitate night travel on the new super-highway 118-mile New Jersey Turnpike. American Gas Accumulator Co., Elizabeth, New Jersey, under a contract to handle the safety installation for the New Jersey Turnpike Commission, originally planned to drive the stakes from the bed of a truck with a hand-held pneumatic hammer. But this proved too slow a procedure, so a faster method had to be found to meet an accelerated schedule.

Solution: a SCHRAMM Pneumatractor with a Pneumadriver (cantilever bar carrying a wagon drill air shell fitted with a paving breaker as a hammer). A rack on the front of the machine held a supply of stakes, a feeler gauge gave correct distance from pavement edge, a 150-ft. chain dragging behind showed stake spacing, and match marks on hammer and guide indicated driving depth.

Immediate result: Stake driving progress was upped 300%! A small crew bettered 35 units per hour—a total of 375 per day.

You, too, will find SCHRAMM Pneumatractor provides many savings and advantages. For full details write today for your copy of Catalog 5140.

SCHRAMM
AIR COMPRESSORS
The Compressor People
WEST CHESTER PENNSYLVANIA

CRANE TRAVELS on inside run of realigned stream bed to handle materials for the three metal culverts as they are erected simultaneously. Corrugated arches are bolted down to steel channels imbedded on 3-ft reinforced concrete sidewalls.

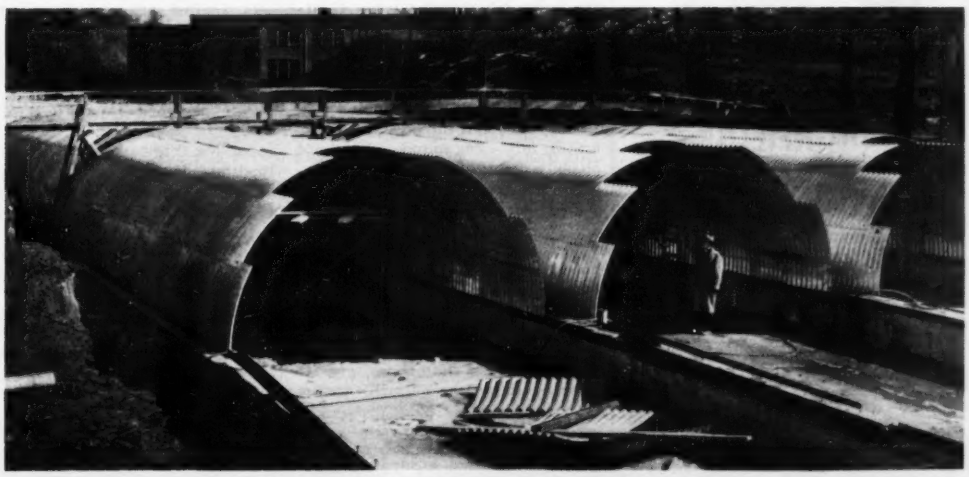
Three-Barrel Metal Culvert Diverts Creek

By JOHN KREMER, Research Consultant

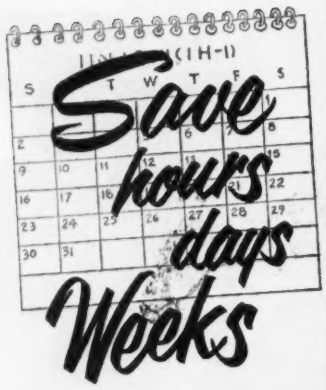
A THREE-BARREL CULVERT was constructed recently to straighten the course of Big Creek, formerly flowing through Cleveland's Brookside Park in a long curve that wasted a large parcel of valuable ground.

Each barrel of the corrugated metal plate culvert measures 18 ft by 11 ft 4 in. and is almost 1 mi long. The culvert arches are assemblies of semicircular steel plates, made of No. 3 gage corrugated Toncan iron (50% pure iron as supplied by Republic Steel) with 3-oz galvanizing.

Two sizes of corrugated plates were used. The larger, measuring 8x6 ft, weigh 640 lb apiece; the smaller plates measure 8x4½ ft and weigh 472 lb each. More than



STEEL PLATES of Toncan Iron are bolted together to form corrugated metal culverts. Plates used are of two sizes: 8x6 ft and 8x4½ ft, weigh 640 and 472 lb each. Workmen on rolling scaffolds insert bolts from bottom up. Tightening is by air impact wrench.



ON CONSTRUCTION JOBS

◆ Fairfield's Lightweight Troughed Belt Conveyor saves you minutes here, hours there—adding up to days and weeks of valuable time over the period of a year. Rush it from one job to another. Once in position it slashes loading and unloading time for all types of aggregates—sand, lime, cinders, and gravel. Review the facts yourself—the coupon below will bring you complete information.

High capacity, low cost Model 666 for all types of material handling in construction and yard work.

FAIRFIELD

THE FAIRFIELD ENGINEERING CO.

MARION, OHIO

Send for free Catalog

THE FAIRFIELD ENGINEERING CO.
366 Chicago Avenue, Marion, Ohio

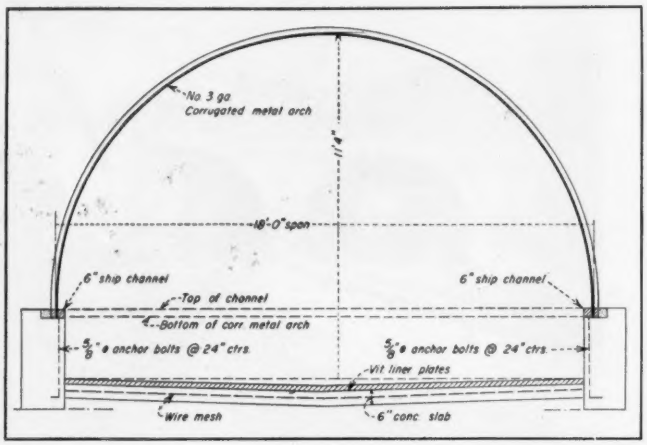
Send me your free illustrated catalog on Fairfield "Construction" Conveyors

NAME _____

ADDRESS _____

CITY _____ STATE _____

THREE-BARREL CULVERT . . . Continued



MAJOR DIMENSIONS and types of materials used are shown in cross-section sketch of a single culvert. Barrels are 2 ft apart and rest on concrete walls which contain normal stream flow.

30,000 bolts (¾x1½ in.) were used to secure the plates. Total weight of the steel arches is approximately 1,000 tons.

Curro Construction Co., the contractor, erected the three culvert barrels simultaneously. A crawler crane, traveling in the center section of the new stream bed, handled all the plates. A cable was slipped through a bolt hole, the plate lifted into position and bolts inserted from the inside out after the plate had been aligned with a drift pin. Workmen on rolling scaffolds inside the arches inserted the bolts which later were tightened from the outside with an Ingersoll-Rand pneumatic impact wrench. From tests made by the Bureau of Public Roads, the ultimate strength of this construction—the plates, not the bolts, were the first to fail—was found to be about 50,000 psi, as it was a flexible structure. A safety factor of 2½ is obtained because 20,000 psi is the designed stress.

The arches are bolted down to hot-galvanized steel channels imbedded on top of 3-ft reinforced concrete sidewalls that take care of normal stream flow.

The flow channels, resting for the most part on a shale base, are V-sections, 5 in. lower in the center than at the outside. They are placed for about a quarter of their length in the old stream bed of Big Creek and three-quarters in a new bed.

A special feature of this project is the use of vitrified clay liner plates, to give the concrete culvert bed a layer of protective armor.

To prevent destruction by chemical agents in the water, which at low flow are highly concentrated, the mesh-reinforced 6-in. channel slab is lined with corrosion-resistant vitrified clay tile plates 18 in. long, 9 in. wide and 1 in. thick.

The plates are imbedded in a 2 to 1 sand-cement mixture by a sliding and pressing action. In addition to protecting the channel bottom against attack by sewage components, the vitrified clay liner plates, being extremely hard, protect against abrasion by sand or rocks carried down in flood stages. The channel also is subject to ice scouring and freezing strains, which the clay liners resist.

The designed capacity is about 8,000 cfs, flowing 12 in. below the top of the three arches. Permissible loading is H-20, capable of carrying a road traversed by 20-ton trucks at any point of the culvert with a 2-ft earth fill over it. The cost per lin ft of concrete base and corrugated arch was $318 for straight sections.

Gore sections of the culvert cover were made of straight sections, torch cut and welded to the proper deflection. They were then disassembled, transported to the job site and re-assembled.

Photographs, sketches and special data for this article were made available by the Sanitary Engineering Committee of the National Clay Pipe Association.

FULL LOADS . . . FULL PROFITS

with Firestone TIRES

IT TAKES full loads on your equipment to build bigger profits on the job . . . and you can move full loads without profit-losing downtime on Firestone Off-the-Highway Tires.

There is a specially built Firestone Tire for every off-the-highway job . . . the All Non-Skid for maximum flotation under big loads on free rolling wheels; the Rock Grip for rock work and strip mining with its tough, cut-resisting tread; the All Traction Heavy Duty for on and off-the-highway hauling; the Ground Grip for traction power in dirt or soft going.

Let your Firestone Dealer give you complete information about Firestone Off-the-Highway Tires. Let him show you how to increase your yardage and profits.

SPECIFY FIRESTONE

Enjoy the Voice of Firestone on radio or television every Monday evening over NBC

Copyright, 1952, The Firestone Tire & Rubber Co.

How to Load a Belt Conveyor

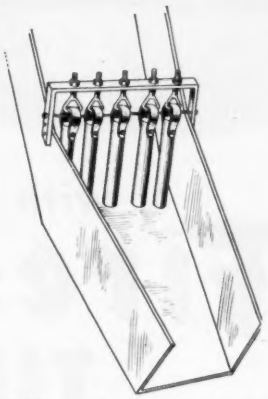
BELT CONVEYORS play an important part in cutting costs associated with the handling of materials for practically all construction projects. They range in size from the small portable loaders to extensive layouts that move millions of tons of aggregate over distances of a mile or more.

As with any other construction equipment, increased service life and low maintenance costs are welcome dividends to the contractor. Proper installation, adjustment and alignment, and correct loading practically eliminate excessive wear.

A study made under the direction of Newell Perry, belting engineer for the Thermoid Co., reveals that loading conditions are a prime factor governing conveyor-belt wear. The study brings out that the loading point is a critical zone. As a result, Perry suggests that existing and proposed conveyor installations be analyzed and arranged to create the best "loading condition" possible.

One of the basic requirements for low-rate belt wear is that material loading a belt should be moving in the same direction and at the same speed as the belt. Where this requirement has not been satisfied, installations have shown excessive belt wear due to abrasion created at the loading point.

When lump material is being carried, an attempt should be made to have such material cushioned by a prelaid layer of fines. A screen or grizzly at the bottom of the loading chute or an oval or "fish-tail" notch cut in the lip of the chute will deposit a layer of fines over the belting, thus providing protection against bruising.



VELOCITY OF MATERIAL coming down the loading chute can be controlled by a baffle of steel or wooden bars to slow down big pieces.

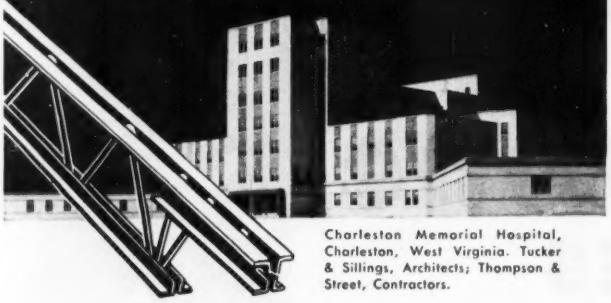
At the same time, the velocity of loading-material flow should be controlled by pitching the loading chute properly. If this is not feasible, a baffle of iron or wooden bars should be constructed in the chute to reduce the speed of material flow on to the belt. But the minimum rate of this flow still should be sufficient to maintain delivery of the desired volume.

In like manner, falling distance between chute and belting must

LACLEDE JOISTS

add STRENGTH plus *Beauty*

to the new Charleston Memorial Hospital



Charleston Memorial Hospital, Charleston, West Virginia. Tucker & Sillings, Architects; Thompson & Street, Contractors.

Where lightweight strength, beauty . . . and functional design are vital—you'll find the answer in versatile Laclede Steel Joists. By specifying Laclede Joists for floor and roof construction you can speed completions *and* help conserve steel.

- No allocation needed—steel joists are a Class 'B' product.
- Prompt shipment from our enlarged mill facilities to suit your construction schedule.

Write for information on the complete line of Laclede quality steels for construction.

LACLEDE

LACLEDE STEEL COMPANY

St. Louis, Mo.

be minimized to prevent excessive speed of material-flow which, in the case of lumpy material, might be great enough to cause belt damage.

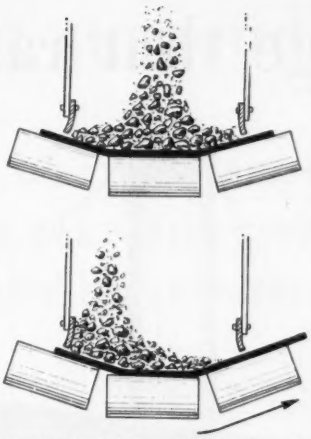
In no instance should a material strike the belt directly above a solid pulley because the resulting hammer-anvil action will render the belting unusable in a short time. The chute should be located so that material will strike the belt between idlers. However, in cases where heavy material is being loaded, it may be necessary to load directly over rubber-covered or pneumatic idlers.

Carrier Pulley Spacing

In some cases, impact of the load between idlers will set up belt vibration. Resultant chattering may depress the belt sufficiently to allow material to escape under the skirt-boards. This may be prevented by locating the chute so that loading material will strike the belt far enough ahead of the tail pulley to allow insertion of at least one belt-steadying carrier pulley. Also, carrier pulleys should be spaced more closely around the loading zone because of the impact loading of the belt at that point.

Getting back to the loading chute, Thermoid emphasizes that construction of chute skirt-boards and flexible skirts should be considered carefully. Skirt-boards should be long enough to settle the material before it leaves the loading area. Flexible skirts preferably are improvised from rubber-covered edges of belting remnants.

These remnants are placed so that the rubber-covered edge contacts the belting. Should this be reversed and the exposed-fabric edge of belt remnant placed against

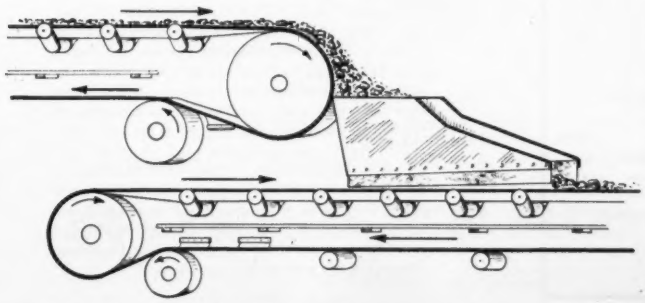


PROPER LOADING of belt is shown in upper sketch. Lower drawing illustrates how belt "rides up" when loading on one side only. This off-center operation causes several types of belt wear.

the moving belt, grit will collect in the fabric. Resultant abrasive action of the flexible skirt will, in time, wear a track through the belt cover.

Vertical spacing between chute skirt-boards and belt increases toward the open end of the chute. Thus the width of flexible skirts, as cut from a belt remnant, should increase toward one end. This construction allows uniform contact between the flexible skirt and belt over the entire lengths of the chute skirt, and minimizes spillage around the loading point. At the same time, wedged-in lumps of material can be worked free by the forward motion of belting.

Chute construction should be such as to settle the load properly without allowing spillage or jamming of material around the chute outlet.



IDEAL LOADING CONDITIONS. Closely spaced idlers around chute prevent belt chattering which might shake material off sides. Skirt-boards are flexible and spaced properly.

COMMENT
from the
BUTLER ENGINEER
Of Building Booms and Brassieres with Bullets

Well, I'm back to a diet of gruel, brewer's yeast and gallons of milk after the carousel at the Ready Mixed Convention in Chicago and the Concrete Products jamboree in New York. Too much terrapin and lobster, I guess. Couldn't be anything else.

Seriously, the best parts of both meetings were the opportunities to renew old friendships and make a lot of new ones. I do want to thank everyone — past, present and future owners of Butler Plants—who stopped for a visit at the Butler exhibits. It's heartwarming to know there are so many friends of the products we make and of the organization that makes them.

Have any of you been up to Canada recently? They're in the most spectacular, triple-barrelled, hell-a-whippin' construction program I've ever seen. And the money to pay for it, too.

I look at the controls, artificial shortages, arguments, red tape and indecision on our side of the border and I feel we're "fiddling while Rome burns." *Canada, gentlemen, has thrown the fiddle away and picked up the trowel.*

And if they say they're going to build the St. L. Seaway *alone* if necessary — it ain't exhaust from an idling engine. They can do it and will — and we'll pay at their toll gate.

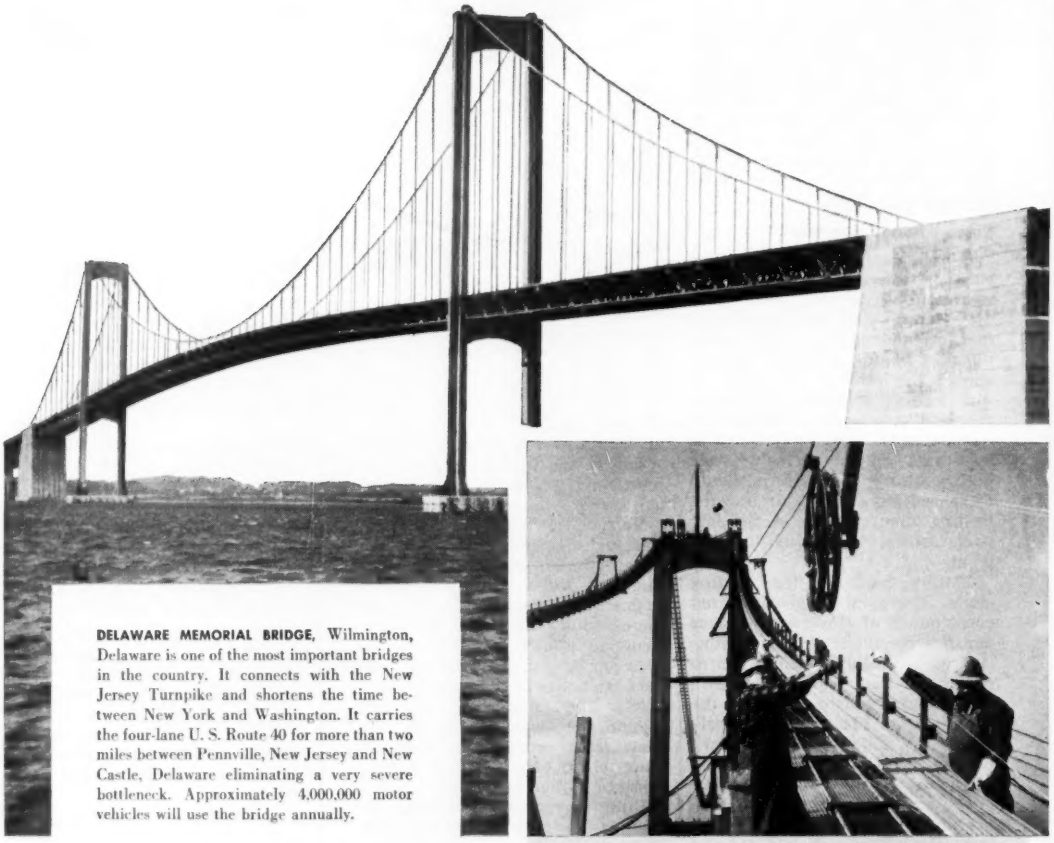
Sat in the audience at a T-V studio in New York. Western stuff. Girl a couple of seats over said, "What do you call that thing the cowboy's wearing — you know, that brassiere with bullets?" *Shades of Buffalo Bill! What a name for a shoulder holster!*

Yours for better roads
and more of 'em,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

The bridge that raised itself



DELAWARE MEMORIAL BRIDGE, Wilmington, Delaware is one of the most important bridges in the country. It connects with the New Jersey Turnpike and shortens the time between New York and Washington. It carries the four-lane U. S. Route 40 for more than two miles between Pennville, New Jersey and New Castle, Delaware eliminating a very severe bottleneck. Approximately 4,000,000 motor vehicles will use the bridge annually.

SUSPENDING THE FIRST CABLES. Before any spinning of the main suspension cables could begin, four 2-inch American Tiger Brand Wire Ropes were strung from anchorage to towers and from tower to tower. On these were placed Cyclone Chain Link catwalks with wire rope railings to provide safe footing for the workmen.

Next a wire rope tramway system was installed to carry the hauling cable for the spinning wheels. The photo shows workmen picking the individual wires from the spinning wheel to form the main suspension cable. The 436 wires in each strand of the main cable are, in reality, two continuous wires which are connected to the anchorage at both ends by means of eyebars. The end of the wire from each successive reel was spliced to the end of the wire from the next reel and the ends of the last pair of wires of the strand were spliced to the ends of the first pair. It took 19 of these strands to form each of the main cables.

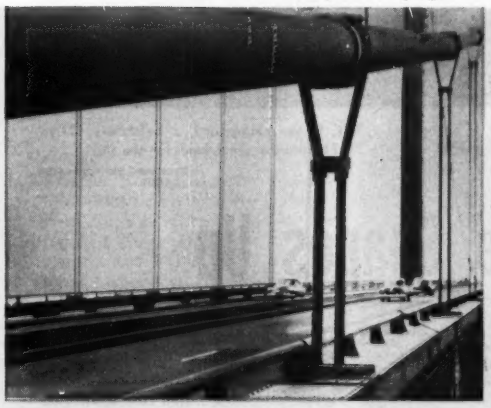
Interesting Facts

Total length of bridge—10,765 feet
Length of Main Span—2,150 feet
Length of each suspended side span—750 feet
Height of towers above piers 417 feet—about equal to height of a 35-story building
Clearance of main span above water—175 feet
Size of main wire cables—19¾ inches in diameter
Size of wire rope suspenders—2 inches in diameter
Total length of suspenders—56,000 feet
Estimated weight of superstructure—73,141,500 pounds
Total estimated cost of bridge—$43,900,000

by its own suspenders...

OR, HOW U·S·S TIGER BRAND WIRE ROPE HELPED TO BUILD AND SUPPORT THE WORLD'S 6th LONGEST SUSPENSION BRIDGE

IT'S QUITE A FEAT to build a two-mile long suspension bridge over deep water when the towers are as high as a 35-story skyscraper. But it's even more of a feat to use the wire rope suspenders for the original construction cable between towers, then take the same wire rope, cut it into proper lengths and use it again for the permanent vertical suspenders. It's like lifting yourself by your bootstraps. The photographs show how it was done.



56,000 FEET OF TIGER BRAND WIRE ROPE SUSPENDERS. These two-inch wire rope suspenders were made from the rope which was originally used to support the catwalks. This unique method of construction saved many thousands of dollars on the job. It was originated by the American Bridge Division of United States Steel Company and is now used in building most suspension bridges of this type.

BEAUTY IN STEEL. The Delaware Memorial Bridge represents the combined efforts of many different divisions of the United States Steel Company. The steel for spans and towers was made by the United States Steel Company, Cables and Wire Rope by American Steel & Wire Division, cement by Universal Atlas Cement Division and the bridge itself was erected by American Bridge Division.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

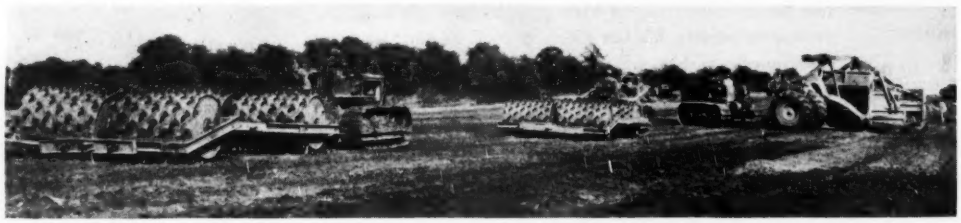
U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL

HARD CLAY is loaded by two International TD-24 tractors pushing a 30-yd LeTourneau Tournapull in tandem formation for Pool Construction Co. In the background is a TD-24 assisting a 15-yd Tournapull scraper on the same cut.



FILL IS PACKED on Pool Construction Co's. million-yard Turnpike job by two International TD-18A crawlers, each pulling a dual set of sheepsfoot rollers. In the background, a LeTourneau 23-yd scraper pulled by a TD-24 brings another load for the fill.

International Harvester photos

Turner Turnpike Shapes Up

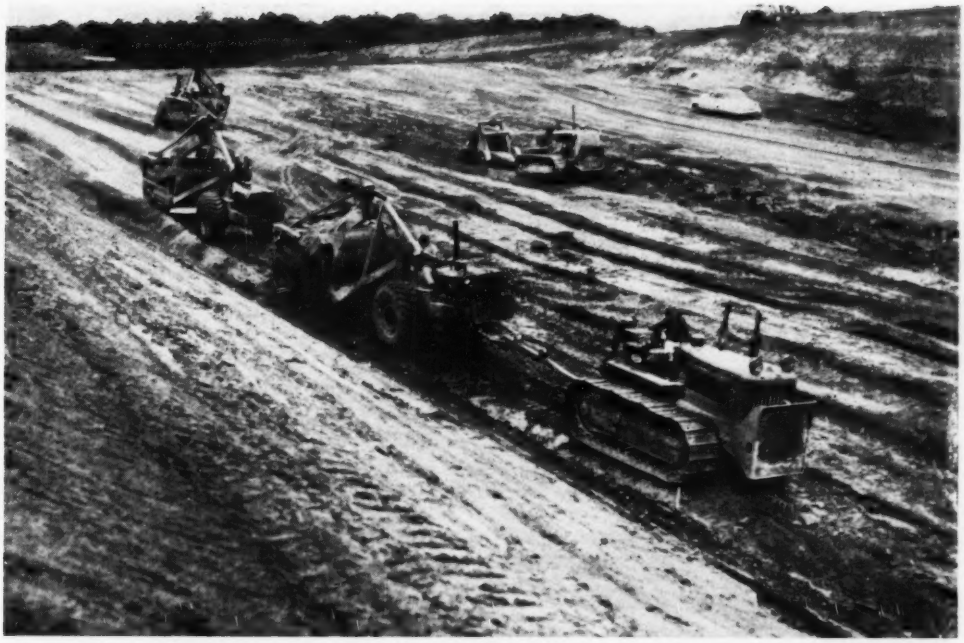
MODERN ROUGH RIDER is this tractor operator for J. W. Moorman Construction Co. as his TD-24 diesel crawler and 6½-ton LeTourneau Rooter clash with a rocky section.

DIRT IS FLYING on another major road construction job—the 88-mi Turner Turnpike connecting Oklahoma City and Tulsa in Oklahoma, now about one-half completed. Newest of the super roads under construction, it will chop 13½ mi from the present highway distance between the two cities and save up to an hour in travel time.

The divided four-lane turnpike requires the moving of 12,500,000 cu yd of earth; clearing 1,000 acres for right-of-way; and an estimated 2,450,000 sq yd of pavement for its two 24-ft roadways. An asphaltic concrete pavement is specified.

Minimum width of the right-of-way is 200 ft, and curves will be long and easy. It will be separated from adjacent farm lands and commercial properties by a hog-tight wire fence strung on steel or concrete posts.

Interchanges between the two terminal cities will be possible at



SNATCH BAR LOADING ASSIST is employed as International TD-24 helps Tournapull scraper on section being graded by Hunter Construction Co. Caterpillar D-8 in background settles its weight toward rear of crawlers as ripper it is pulling bites deep.

Chandler, Stroud, Bristow and Sapulpa—with provision for a future interchange at Warwick, where the proposed State Highway 40 will intersect the $31,000,000 turnpike (named after former governor Roy J. Turner).

Earthmoving operations have been carried on simultaneously on a large scale by a number of contractors working on separate sections. Cuts are being ripped through the low hills and fill placed and compacted to bring low spots up to grade by a large force of heavy earthmoving equipment, both on crawlers and on rubber.

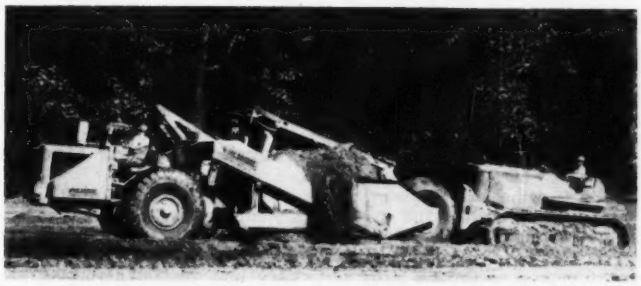
WIDE CUT IS RIPPED along hillside for Smith, Odle & Smith by a TD-24 and ripper. In the background is another TD-24 push-loading a 15-yd Wooldridge Terracobra scraper.

Turnpike Earthmovers

Hunter Construction Co., Ada, Okla.
Amis Construction Co., Oklahoma City, Okla.
Stamey Construction Co., Altus, Okla.
Moorman, J. W. & Son, Tahlequah, Okla.
Pool Construction Co., Shawnee, Okla.
Tway, R. R., Co., Oklahoma City, Okla.
Smith, Odle & Smith, subcontractors for Gillioz Co., Monett, Mo.

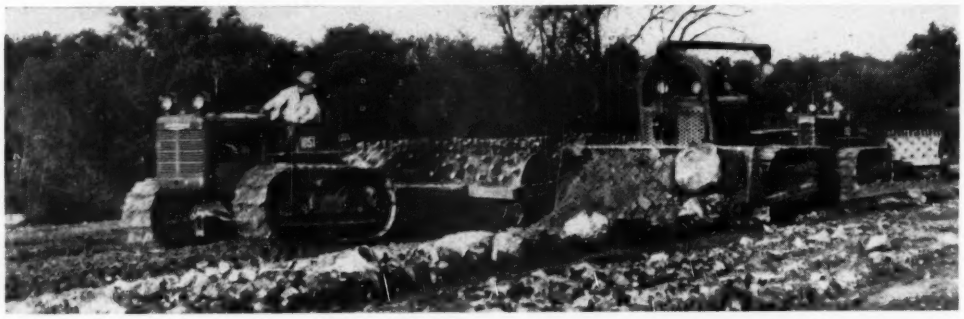
• • •

More photos of Turner Turnpike on next page.



OVERFLOW LOAD for 17½-yd Wooldridge Terracobra is push-loaded by blanketed International TD-24 for the Stamey Construction Co. Scrapers do most of the earthmoving.

RIPPER BITES DEEP as an International TD-24 pulls and a TD-18A pushes. Alongside them, two *TD-24*'s manhandle a 23-yd LeTourneau scraper, front and rear, to get a heaping load. This operation is on the Pool Construction Co. section.



HIGH COMPACTION is specified: 95% on the 16-in. template grade and 90% for the 12-in. subgrade. Amis Construction Co. here uses an International TD-18A with Heil cable dozer to level the fill and two TD-14A's pull the compaction rollers.

ROCKY HILLSIDE is chewed away by Amis Construction Co. equipment. TD-24 push-loads a 15½-yd. Euclid scraper as a 5-yd. Northwest shovel loads a 21-yd. Euclid wagon on the other side.

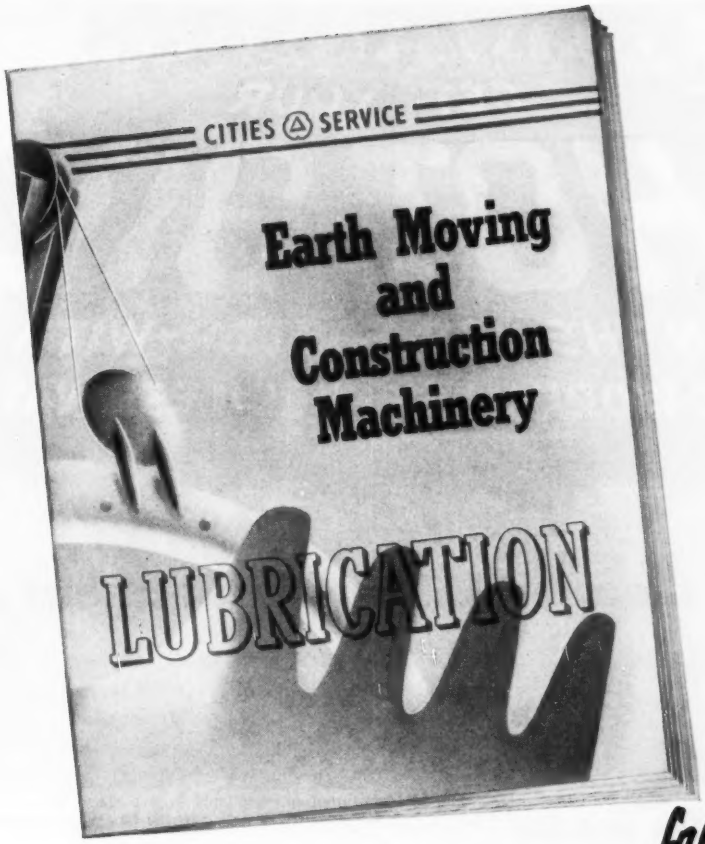
CREEK CHANNEL IS CLEARED to prepare for a turnpike bridge by R. R. Tway Co. International T-9 with Bucyrus-Erie dozer digs in as dragline stands by for further excavation.

Take Care of Your Four-Season Machine—The Grader

HERE IS some Allis-Chalmers advice on graders: "Do the controls work properly? Is the snubber bar working as it should? Check it for worn cups or serrations. Look for worn shaft bushings, pins or broken springs.

"See that the control shaft brakes are adjusted and check the engaging lugs on the sliding clutches or gears for worn and round ends. They may need squaring with a file or grinder. Examine the control shaft support bearings and put in new ones if worn badly.

"Are the joints stiff? Adjust the ball-and-socket joints to provide a snug fit; not too tight, not too loose. Adjust the drawbar ball and socket. Inspect the universal joints. If loose or stiff, replace bearings."



Have you received your 1952 free edition?

FOR YEARS, men in construction and allied fields have found this lubrication book tremendously helpful. It not only discusses the basic fundamentals of lubrication, but it gets right down to specific lubricating techniques for all your equipment.

Proper use of the practices outlined in this book, plus the full line of Cities Service Quality Lubricants can:

- **Lengthen the life of your equipment.**
- **Increase productivity.**
- **Speed up operation.**
- **Save on operating costs.**

If you're the boss and owner, it protects your investment, increases profits and simplifies your operations. If you're working for the boss, proper use of this book will help you on the job. Write now for your 1952 edition of EARTH MOVING AND CONSTRUCTION MACHINERY LUBRICATION, CITIES SERVICE OIL COMPANY, DEPT. D 39, Sixty Wall Tower, New York City 5.

CITIES SERVICE

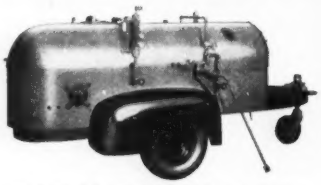
QUALITY PETROLEUM PRODUCTS

GET YOUR

HOT OIL

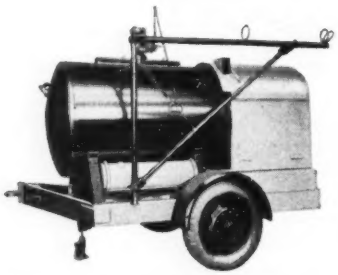
ON THE JOB FASTER-WITH
LESS WORK-LESS FUEL-LESS WATER

with Cleaver-Brooks Equipment . . .



TANK-CAR HEATER

A Cleaver-Brooks Tank Car Heater is the starting point for fast work on any construction project. A faster job means man hours saved — contracts completed on time and without penalties. Designed for fast steaming, this unit gives you 125 lbs. steam pressure in 20 minutes with high heat transfer and low fuel consumption. Available in two sizes, skid or trailer mounted—Two car heater (28 bhp), Three car heater (42 bhp).



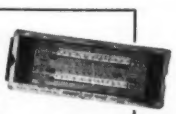
PUMPING BOOSTER

The Cleaver-Brooks Pumping Booster heats only the amount of material required — not necessary to heat entire car. No steam or water required for operation with this oil fired, high efficiency unit. Cleaver-Brooks pumping boosters heat to high temperatures faster through the exclusive flow-equalizer feature. Available in two sizes, skid or trailer mounted — No. 1 Booster, capacity approx. 300 gph, temperature raise 25 to 35°F., No. 2 Booster, capacity approx. 350 gph, temperature raise 45 to 55°F.

It all sums up to more work and more profit with a Cleaver-Brooks Tank Car Heater or Pumping Booster. Write today for further information.

CLEAVER-BROOKS CO., DEPT. D, 398 E. KEEFE AVE., MILWAUKEE 12, WIS.

Write on Your Business Letterhead . . . For the Bituminous-Mix Calculator — a ready reference slide rule showing weight of mix needed in lbs. and tons based on area and depth of area to be covered.



Cleaver-Brooks

BUILDERS OF EQUIPMENT FOR THE GENERATION AND UTILIZATION OF HEAT

STEAM BOILERS • OIL AND BITUMEN

TANK-CAR HEATERS • DISTILLATION EQUIPMENT • OIL AND GAS-FIRED CONVERSION BURNERS

It's Business as Usual Along Busy Seattle Waterfront When . . .

Gantry Cranes Handle Construction Materials

TWO GANTRY CRANES on rails are employed to good advantage in the construction of the $10,000,000 Alaskan Way viaduct at Seattle, Wash.

The double-deck viaduct is being constructed along the Seattle waterfront, over numerous railway tracks and spurs leading to piers, warehouses and other shipping facilities. The railroad companies are vacating and relocating these tracks to clear the completed viaduct and the contractor's operations. However, railway service must continue at all times on a track paralleling the viaduct.

On the other side of the track, heavy vehicular traffic moves along Alaskan Way. Intersecting streets to the business district must be kept open to traffic, and freight-truck access must be maintained to numerous warehouses along the inshore side of Alaskan Way. The contractor's operations therefore virtually are restricted to the right-of-way provided for the viaduct.

The two Washington (Model 28-105) gantries span the railroad track, allowing train service to continue as usual. Several crawler cranes are used in conjunction with the gantries.

One gantry is used for each deck, with plenty of space between them. The operators have good visibility, looking down even on the upper deck, 55 ft above the ground. Each crane has a lifting capacity of 42 tons.

The Alaskan Way roadway surface and railroad tracks originally were supported by pile trestles constructed over the water. In later years, a bulkhead was constructed and the trestle area was filled, without removing the trestles.

All foundations for the viaduct are supported on Raymond cast-in-place concrete or steel H-piles driven through the old fill material, the steel piles being used in the area where most of the buried trestles are encountered. After completion of the pile driving for each bent, the contractor constructs the reinforced-concrete footing and the section of columns for the lower roadway. Falsework is set up, and the cranes hoist and place materials for construction of the beams, girders and deck slab of the lower roadway.

Sections of the columns for the upper roadway then are constructed, followed by construction of the upper beams, girders and deck slab. Falsework for the lower

FASTER DRILLING at Lower Cost!

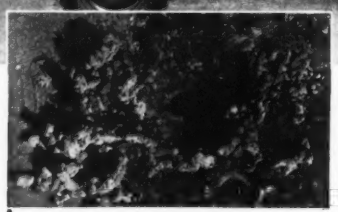
Parmanco

MODEL 51 SELF-PROPELLED

HYDRAULIC COAL AND CLAY DRILL

4 features for easy operation and top performance

- Hydraulic Feed
- Fluid Motor for Auger Rotation
- Finger-tip Controlled
- One-man Operation



NEW: The Model 51 Drill is equipped with Automatic Drill-Cuttings Shield and Guide. Now blast holes are kept absolutely clean from cuttings. A dam is formed about blast hole, excluding casual surface water.

Characteristic of PARMANCO units, is the excellence of construction. The transmission is heavy duty truck type with four speeds forward and one speed reverse. The main frame is of all welded I-beam construction. The rear end is truck type with hydraulic brakes.

This Coal and Clay Drill has been designed around a 40 h. p. engine. It will drill 2¼ inch holes at a speed up to 7 feet per minute in No. 5 coal. Another Parmanco engineering feature is the ability of this drill to handle 4¼ inch augers up to 25 feet in depth.

PARIS MANUFACTURING CO., Paris, Ill.

SEATTLE VIADUCT . . . Continued

roadway is supported on driven timber piling, each capable of carrying a 30-ton load. This falsework and piling remains in position until the upper-deck concrete attains its strength, so that the lower deck will not be required to carry the full load. The upper deck is supported by framed timber bents set on the lower roadway, directly above the pile-driven bents.

Three Contracts

Three contracts have been awarded for the viaduct project, and one completed. MacRae Brothers have completed a $1,193,911 contract for the first unit, a 6-lane elevated section of 58-ft roadway at the north end. And they have just been awarded a $1,063,569 contract for the southern section of the viaduct. Morrison-Knudsen Co., Inc., and Rumsey & Co. hold a $3,691,400 contract for the central section, where the gantries are used. Completion is scheduled for next November.

The viaduct is being constructed under contract to the Washington State Highway Department after preparation of plans by the city to solve a traffic problem of long standing.

SPEED FORMS

Cut High Labor Costs

Make Big Savings

You Don't Have to Buy New Forms for Every Job

SPEED FORMS can be set up, stripped, cleaned, moved and reused in far less time than wood. Lightweight, easy to handle. No heavy bracing needed. No gadgets or special fastenings—Units go together with wedge clips.

Made of Steel—Good for reuse again and again on job after job indefinitely without repair. Reduce material costs way below wood—Many records of 400-500 and more uses.

Just send us plans of the job. Let us show you how to save *Real* Money on Form Work. Write Dept. CR. Ask a representative to call.

IRVINGTON FORM AND TANK CORP.

20 VESEY ST., NEW YORK 7, N. Y.

OLD SHOVEL PARTS *OUTLAST* NEW ONES!

TRACK PADS

BUCKETS AND TEETH

HARD-FACED SHEAVES

IDLERS AND TRACK ROLLS

DRIVING TUMBLERS

if you want more service from wearing shovel parts protect them with STOODY ALLOYS

ORIGINAL EQUIPMENT SIZE IS RETAINED. As most parts lose size, they also lose efficiency . . . worn teeth and worn bucket lips don't take a full bite. Worn idlers, pads and rollers cause trouble and delay. *Stoody Alloys give the protection where you need it, maintain all-important size!*

CONCENTRATED WEAR AREAS RECEIVE EXTRA PROTECTION. Bucket sides and bottoms develop distinct wear patterns. A few stringers of hard-metal in these areas slow down effects of wear, equalize overall bucket life.

LESS DOWNTIME—FEWER REPLACEMENTS. Hard-facing usually doubles part life. On specific items, increases up to 3 or 4 times have been noted. *Keeping parts in operation means less downtime for repairs, fewer costly replacements!*

Why not get the most from your shovels by hard-facing now with STOODY ALLOYS?

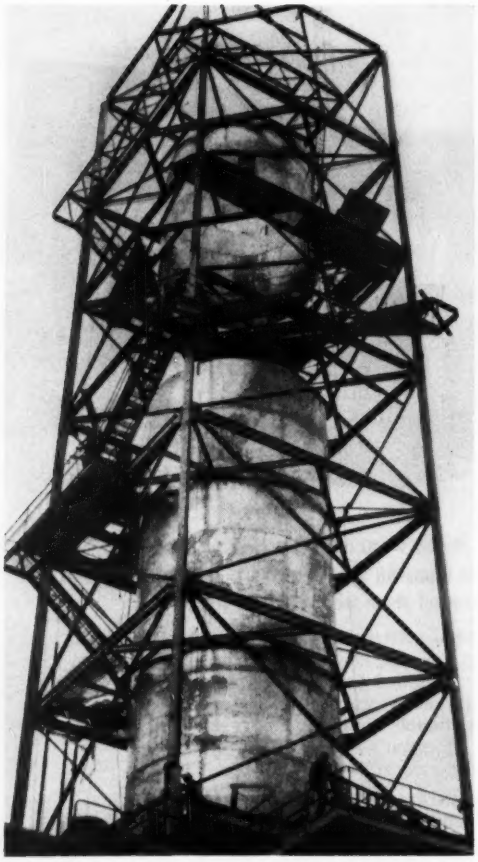
Available for manual or automatic welding methods.

Consult your nearest Stoody Dealer listed in the Yellow Classified Telephone Directory under Welding Equipment & Supplies. He will recommend the BEST *Stoody Alloy for your job and provide a list of local job welders having Automatic Welding facilities—or write direct.*

STOODY COMPANY

Whittier, California

ALL-ALUMINUM TANK is built within steel tower to process ammonium nitrate at Mississippi Chemical Corp. plant at Yazoo City. Erection is simplified by welding all plates at one level in tower



(just above funnel section, left photo) and raising completed sections as a unit. Air duct collar will be fitted to tank just below top three-ring assembly, and others lifted to it.

Tall Aluminum Chemical Tank Grows Upward

BY

W. B. DUNWOODY

Asst. Technical Director, Mississippi Chemical Corp.

J. A. RADEMAKER

Structural Engineer, Girdler Corp.

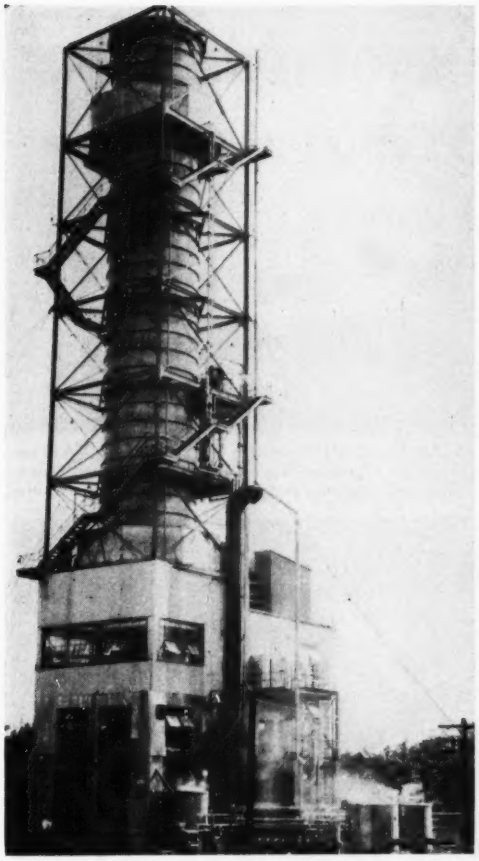
J. D. WILSON

Construction Engineer, Girdler Corp.

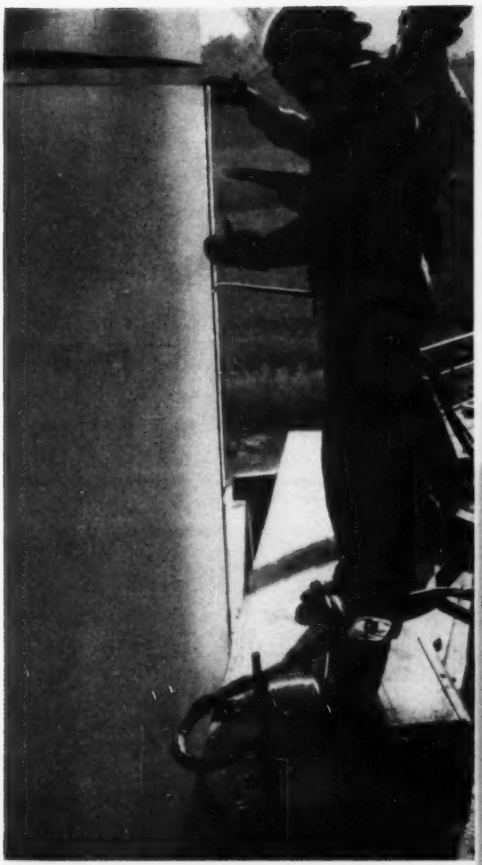
CHEMICAL PROCESS REQUIREMENTS and close tolerances dictated an unusual erection procedure for a 20-ft dia aluminum tank 120 ft high. Because the interior had to be absolutely smooth without any protrusions, the 64 aluminum plates that make up the shell were all welded. Because of lack of clearance between the tank and its supporting steel-frame tower, exterior reinforcing angles had to be left off until the shell was completely erected, which meant extra-strong welds. And because it was desired to perform all shell welding from one spot to minimize moves and scaffolding, upper shell sections were assembled at a low level and then raised as new sections were added on below.

The aluminum tank is part of a prilling tower built by Girdler Corp. at Mississippi Chemical Corp.'s Yazoo City plant. In it, liquid ammonium nitrate is converted into solid pellets (prills) for use as fertilizer.

The tank shell is made up of 16 rings of plates, each ring formed of four segments, to make a 20-ft dia tank 120 ft high. Plates are 3/16-in. 3SF aluminum stiffened by exterior hoops of 4-in. 61ST aluminum angles tack-welded around horizontal joints and at the midpoint of each ring of plates. The tank is sup-



COMPLETED UNIT rises 190 ft, incorporates 20x120-ft tank to which stiffener-angle hoops have been welded. Originally planned for 80 ft, tank height was increased 50% during construction.



SHELL WELDING is done with sigma equipment up in tower. Here, backing strap is tacked to prepare for vertical seam weld. Completed section, to which this ring will be joined, hangs above.

as Shell Plates Are Welded on From Below

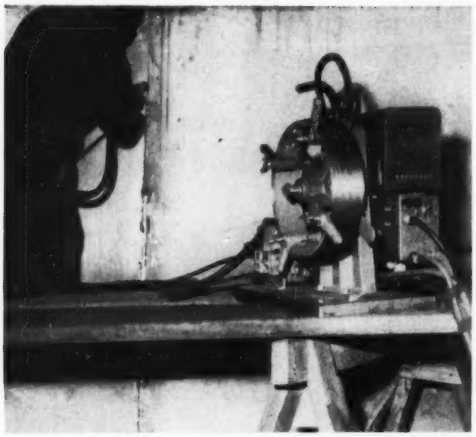
ported inside an open structural steel tower so that its base is 70 ft above ground.

The surrounding tower was built first, then the tank inside it. Shell erection procedure was first to assemble and weld the top ring of plates at the tank base level up in the tower. Upon completion, this ring was raised clear so that the next four plates could be welded into a ring below it. Then the first ring was lowered to the second and the two welded together. In like manner, subsequent plates were welded into rings and the rings attached to the previously completed section above until the entire shell was finished and in its final position. For ring assembly and attachment, the growing tank was raised and lowered by an air tugger winch hooking on to lifting clamps on the top ring of plates.

This erection scheme allowed all shell-plate welding to be done at one level in the tower. However, close tolerance between tank and steel structure made it impossible to attach the stiffening angles and still raise the shell through the tower, so these were welded on later.

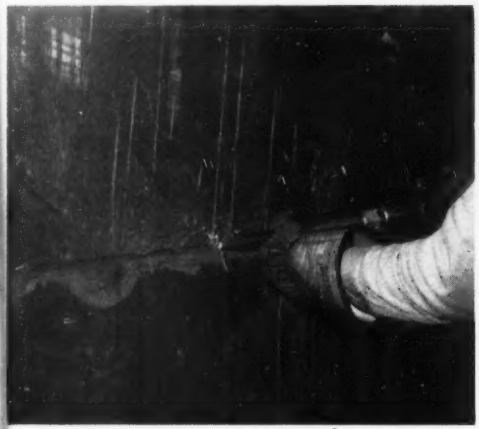
All welding, of both aluminum shell plates and aluminum stiffeners, was with Linde's sigma (*shielded inert gas metal arc*) process. In this, a consumable continuous wire electrode is automatically fed to a hand torch and deposited as filler metal across the arc into the weld. The arc is maintained in a shield of argon gas, eliminating the need for any flux.

Vertical butt welds join the tank's ring quadrant plates. The four segments were positioned on steel I-beams and the entire ring fitted up with 3/16x2-in. 3S aluminum backing straps tack-welded on the outside to space the plates ⅛ in. apart. On completion of



VERTICAL SEAM is welded bottom to top from inside of tank. Linde portable sigma unit automatically feeds welding rod to hand torch, whose gas cup and power cable are cooled with water.

ARGON AND COOLING WATER are fed to the torch from outside of tank, where welding machine supplying current was also located. Argon gas shields the arc, eliminating flux and spatter.



HORIZONTAL SEAM is gouged out with diamond tipped tool inside tank to reach solid metal deposited by welding from outside. After preparation, one pass from inside will complete the seam.

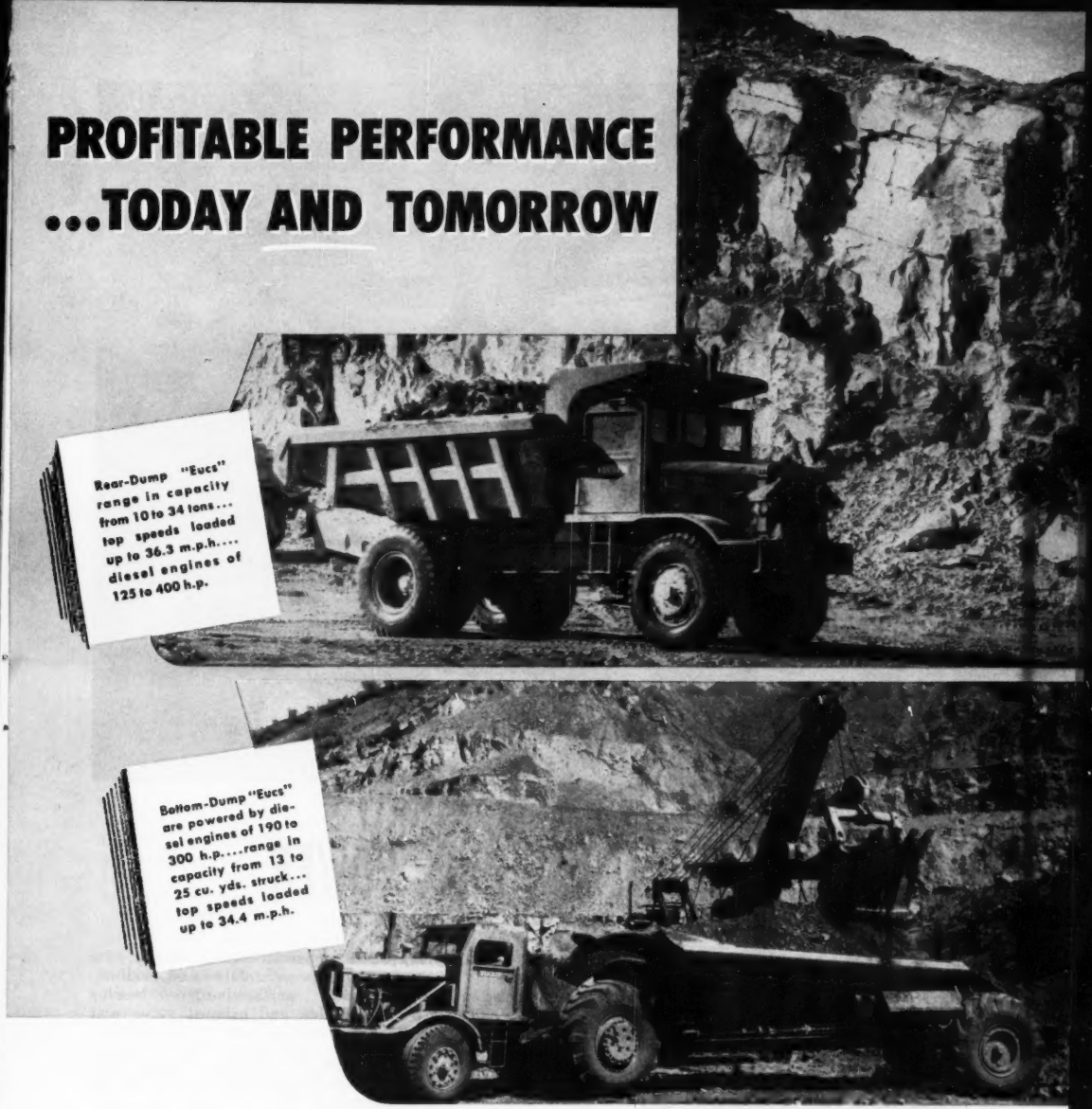
WELDED ALUMINUM SHELL is absolutely smooth inside to meet chemical process requirements. In this worm's eye view, completed section hangs from cables to lift clamps on top ring of plates.

fit-up, the sigma equipment was moved inside the ring and the vertical seams welded after cleaning with a power buffer. Seam welding was from bottom to top. Conditions were: 1/16-in. No. 14 rod; argon flow of 45 to 50 cfh; 180-amp dc reverse polarity at 22 to 23v; and a welding speed of 36 ipm.

Horizontal butt welds join the rings together, and original design envisioned the tank's encircling stiffener angles being used additionally as backing straps and reinforcement for the weld. When attachment of these was postponed until after shell erection, the horizontal welds alone had to support the weight of the tank as it was raised to final position. Welding procedure was to fit up the rings without any spacing, tacking the joint on the outside. Then an outside seam weld was made maintaining approximately 50% penetration through the sheets. Inside the tank, the seam was gouged to the root of the outside weld, then welded solid. Welding conditions were the same as for the verticals except that the outside pass was run a little faster (40 ipm) and the inside pass somewhat slower (28 to 30 ipm).

All excess metal on the inside welds was removed by chipping. This was necessary because the ammonium nitrate has a tendency to collect and build up on any protrusion. Excess on the outside welds was chipped to allow the stiffener angles to be fitted-up snug and tack welded. These tacks, every 6 in., were also done with the sigma equipment when manual arc welding proved inadequate due to poor quality tacks and inability to weld overhead.

PROFITABLE PERFORMANCE ...TODAY AND TOMORROW


Rear-Dump "Eucs" range in capacity from 10 to 34 tons... top speeds loaded up to 36.3 m.p.h.... diesel engines of 125 to 400 h.p.
Bottom-Dump "Eucs" are powered by diesel engines of 190 to 300 h.p....range in capacity from 13 to 25 cu. yds. struck... top speeds loaded up to 34.4 m.p.h.

Euclids are engineered and built for long life and dependable performance in off-the-highway service. Their rugged staying power is a major factor in assuring low cost production on a wide range of jobs.

Some of the reasons for the outstanding performance of Euclids are ample power and traction for steep grades and tough roads, fast travel speeds with large capacity payloads, less down time and low maintenance and operating costs.

Whether you are building dams, levees, airports or roads, or moving material in open pit mines, quarries or industrial work, get in touch with your Euclid Distributor. He can show you how to get more loads per hour at more profit per load.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID CODE: BENTLEY

EUCLIDS *Move the Earth*

Sound advice about TRUCK POWER

When you're sweating to get a rugged construction job done on schedule, you just can't afford to waste time with an underpowered truck—or one that's ill-fitted to its job.

That's why a Dodge "*Job-Rated*" truck is your best bet. It provides the kind of power that takes its job in stride!

Take a husky Dodge 2¾-ton truck, for instance. With Twin Carburetion and Exhaust System, its sturdy high-compression engine turns out *137 horsepower!*

It's mighty dependable power, too. Scores of up-to-the-minute features result in low-cost operation, long life, and year-'round dependability. Consider, for example, such extra values as stellite-faced, sodium-cooled exhaust valves . . . surface-hardened bearing journals . . . intake valve and exhaust valve seat inserts . . . and others!

Add to all this the fact that there's a Dodge "*Job-Rated*" truck that's factory-engineered to fit your job and your power needs to a "T"!

So . . . why not get a truck that's designed especially to take sweat and strain *out* of your toughest jobs and put extra profits in. Get a Dodge "*Job-Rated*" truck! See your nearby Dodge dealer—*soon.*

DODGE "Job-Rated" TRUCKS

16. How to Operate Cranes, Draglines and Clamshells

BY E. O. MARTINSON, Vice-President, Engineering, Koehring Co.

CRANES, DRAGLINES and clamshells operate with the same crane lattice boom attachment and counterweight, and generally with long and wide crawlers to get the greatest stability. Draglines also may require the widest available track shoe to obtain the lowest ground pressure for stability in soft ground.

Pile-driver attachments, lifting magnets and many other lifting attachments also use the lattice crane boom. The dragline may be equipped with smaller diameter drag-drum laggings than the lift crane or clamshell, or several diameters of lagging may be available as optional equipment for draglines and cranes. Cranes and draglines may require higher A-frames because of longer booms; the high A-frame may be necessary to lift the longer boom off the ground.

On the larger machines, it may be desirable to have lower swing speeds for cranes, draglines and clamshells than for shovels and hoes, to provide more support for swinging the machine and with less heating of the swing clutches. Power crane and shovel manufacturers have standardized somewhat on the available boom lengths for the various sizes of machines. The Commercial Standard CS90-49 on power cranes and shovels, established by the U. S. Department of Commerce, also suggests these basic crane-boom lengths.

Fig. 5 on page 80 of the November 1951 issue of CONSTRUCTION METHODS AND EQUIPMENT shows all of the crane-boom lengths available as standard equipment for the various sizes of machines. This chart shows the various recommended boom lengths for dragline service, which are more limited than for crane or clamshell service. The usual boom operating angles for each class of service are shown, and the chart also gives the reach and height obtained by the various booms at any operating angle.

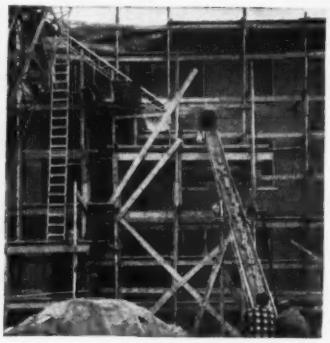
This article, the 16th consecutive one in a series on the fundamental principles of earthmoving, is sponsored by the Power Crane and Shovel Association.

• **Crane operations** — For crane work, the length of the boom can be changed by inserting intermediate sections. If there is to be frequent changing of boom length, it is desirable to have a pendant-type boom suspension, with removable inserts of lengths similar to the crane boom. This eliminates changing the boom-hoist or boom-derricking cable.

When long booms are used for crane work, the manufacturer may recommend the installation of a higher A-frame or gantry than the standard one used with the shovel attachment, especially on the larger machines of the ⅜- to 2½-cu yd size range. Then, too, for lift-crane work, 8 or 10 parts of boom-hoist line are suggested — although shovel boom suspensions may need only 4 parts of line—so that less stress is placed on the boom hoist cables when lifting long booms off the ground, and better control is obtained because of slower movement of the boom.

For light loads, the boom can be further extended by the use of jibs or boom-tip extensions. This

TOP STORY Bricked CHEAPER Than BOTTOM!



That's right . . . on this new construction job the top story was actually bricked at less cost with BRIK-TOTER than at the ground level! The contractor's 4-man conveyor crew raised face brick, sand and lime brick, steel lintels, cast stone sills and *all mortar* required. Authenticated cost records for this job are in our files . . . a remarkable proof of BRIK-TOTER'S efficiency! Prove to yourself that fully-guaranteed BRIK-TOTER pays for itself in 50 hours. Write for cost-saving Bulletin. Address: MAR-RAIL CONVEYOR CO., 574 York Ave., Pawtucket, R. I., U. S. A.

The BRIK-TOTER

Four-cycle Air-cooled

KOHLER ENGINES

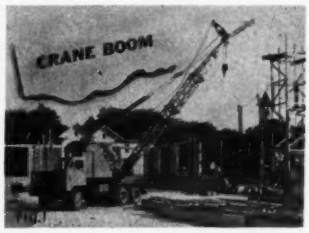
Kohler Engines provide reliable power for a wide range of uses. Compact, quick-starting. Engineered and built to the high standards that have won world-wide acceptance for Kohler Electric Plants in construction and other industries. The Kohler mark has been identified with quality products for over three-quarters of a century. Write for information on sales and service franchise.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

jib can be lowered at an angle to the boom to reach out over obstructions. The allowable load on the jib is limited, and swinging with load should be done carefully, especially when the jib is lowered at an angle to the main boom. Jibs should not be used for general lifting. Rapid swinging will cause excessive twisting stresses in the boom. These jibs usually are adjustable through a considerable angle (see *Fig. 1*).



The crane name plate shows the allowable safe lifting loads for various radii and various boom lengths for the counterweight provided with the machine. The weights of loaded dragline or clamshell buckets should be limited to these safe loads, with a further limitation on the allowable single-line pull. Many times, though, heavier loads are lifted when necessary because the crawler crane will lift approximately one-third more than its rated load before tipping, if it is on a firm surface.

Truck cranes will lift about 17% more than their rated load before tipping occurs. At the shorter radii, the machine can lift more than the safe line pull, and therefore hook blocks must be used to provide 2, 3, 4 or even 6 parts of line.

The engine has sufficient power to lift about 50% more than the recommended single hoist-line pull. Therefore, engine power should not be used as a guide in determining the allowable line pull, and the hoist line should not be loaded to the point where the engine reaches its full load. *Fig. 4*, page 79, CM&E, November 1951, shows typical lifting capacities for seven sizes of excavators and the allowable single-line pulls.

• **Crane adjustments** — Adjustments for a crane are not as critical as those for a shovel because there is less danger of abusing a machine due to overloading, but all of the same general instructions apply to a crane. It is necessary only to adjust brakes and clutches tight enough to hold maximum loads.

(Continued on page 96)

ONLY THOR OFFERS SO MANY FEATURES

IN PORTABLE ELECTRIC SAWS

EXCLUSIVE LONG-SHAFT TRANSVERSE MOTOR MOUNTING transmits as much as 25% extra power, supports blade on oversize ball bearings from one side of the tool clear to the other.

EXCLUSIVE SAFETY-LOCK SWITCH—positive protection against accidental starting.

EXCLUSIVE SHOCK-ABSORBER GEARING harnesses the added power of these great new saws, gives extra life to motor, gears, spindle and blade.

EXCLUSIVE PROTECTED DEPTH AND BEVEL SCALES are in plain sight when you use them—out of the way when you don't. Always accurate.

EXCLUSIVE EXTRA-WIDE REENFORCED STEEL SAFETY BASE for better balance—easier to handle, far safer to use.

PLUS, powerful, built-in sawdust blower . . . over-size ball bearing construction . . . automatic ball bearing blade-guard . . . die-cast aluminum housings . . . steel inserts for bearings and threads . . . finger-tip depth and bevel control . . . convenient handles . . . steel rip guide . . . extra-capacity switches . . . most powerful motors ever used in electric saws.

Silver Line means "new design"—from rip guide to switch—to give you the safest, easiest handling, most powerful saws on the market today. 15 new features . . . many of them exclusive . . . each of them thoroughly field tested and approved for economical, trouble-free operation. Six sizes to meet every demand from the lightweight "6" to the sturdy "12". Try these great new Silver Line Saws now available at your Thor distributor. Independent Pneumatic Tool Co., Aurora, Illinois.

Thor PORTABLE POWER TOOLS

ELECTRIC • PNEUMATIC

ROSCO
MINNEAPOLIS
ROAD and STREET CONSTRUCTION
and
MAINTENANCE EQUIPMENT

BITUMINOUS DISTRIBUTOR . . . Streakless application with pressure constantly and automatically maintained.

STREET FLUSHERS . . . Truck mounted or 2-wheel trailer type. Standard or custom built.

MAINTENANCE UNIT . . . For repair and secondary construction. Truck or trailer mounted.

STREET CLEANER . . . Settles dust as it cleans. Sweeps and washes the street.

OTHER ROSCO PRODUCTS: Road brooms—traction or powered . . . tar kettles . . . power pumping units.

ROSCO MANUFACTURING CO.
3TTH SNELLING AVE. • MINNEAPOLIS 8, MINN.

Ask Your ROSCO DEALER
or write the factory for literature

ROSCO TAR KETTLE

For heating and melting asphalt, pitch and all types of bituminous materials. Welded all-steel construction.

Any tightness beyond that point merely makes the machine harder to operate.

On crane work, the boom-hoist clutch is used much more frequently than on other types of operation, and this clutch requires more careful adjustment. The operator of a lift-crane must be much more careful and take more precautions in his operation than for any other type of operating attachment. The operator should carefully review all safety suggestions.

If the crane boom is equipped with a stop to prevent it from falling over backwards, it should be adjusted to stop the boom at an 80- to 85-deg angle so that it will never go beyond the vertical where it would be difficult to make the boom come back down. If the crane is provided with a boom hoist clutch throw-out lever, this lever should be adjusted to release the boom-hoist clutch several degrees before the boom contacts the stops. The operator should never pull the boom up against the limit stops and under load must be careful not to get too near the stops because of danger of bending the boom when the load is released.

• **Dragline operation**—The dragline attachment has the greatest digging range of any of the attachments applicable to an excavator. It can dig considerable distances above and below the machine level, or with the bucket working below water. It has a longer reach for digging and casting of material. However, since the bucket is not rigidly attached to the machine, it does not have the power to dig in hard materials, nor the accuracy to spot the load in dumping that is obtained with shovels or hoes.

Usually dragline bucket size can be larger than the machine rating —which generally is based on shovel-dipper capacity. The weight of the loaded bucket must be compared with the machine lifting capacity and its recommended maximum line pull. The maximum weight of a loaded bucket generally is limited to about 40 or 45% of its full horsepower line pull. (See Earthmoving articles 11 and 12, beginning on pages 75 and 67 respectively of the November 1951 and December 1951 issues of CM&E for more complete details on sizes, capacities and other useful specifications.—Ed.)

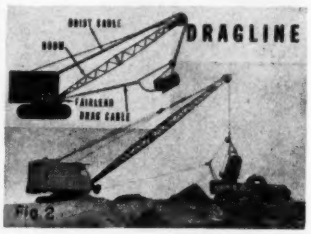


Fig. 2 shows a dragline on a typical job and illustrates main components. *Table A* shows hourly outputs for various sizes of dragline buckets, which must be modified to take care of delays due to weather, maintenance and repairs.

• **Digging face** — Since digging is done by pulling the bucket toward the machine, the digging face is usually somewhat sloping. For most types of dragline work, material should be removed in fairly horizontal layers, working across the digging face a layer at a time. This will give better production than working in deep trenches. Final finishing of the slope will require pulling the bucket up the slope. In finishing slopes it is not necessary to swing the boom far to one side of the bucket to hold it in line, if the digging operation is planned properly.

Such side-pulls with the boom overheat and wear the swing clutches and put unnecessary wear on the flanges of the boom-point sheave. Where it is desirable to mix the material from various

TABLE A — Hourly Dragline Handling Capacity in Cubic Yards

	Dragline Bucket Sizes in Cubic Yards*								
CLASS OF MATERIAL	⅜	½	¾	1	1¼	1½	1¾	2	2½
Moist loam or sandy clay	70	95	130	160	195	220	245	265	305
Sand and gravel	65	90	125	155	185	210	235	255	295
Good common earth	55	75	105	135	165	190	210	230	265
Clay, hard, tough	35	55	90	110	135	160	180	195	230
Clay, wet and sticky	20	30	55	75	95	110	130	145	175

* NOTE: Dragline bucket size may be larger than machine rating. Thus a 2-cu yd dragline bucket might be used on a 1½-cu yd excavator.

CONDITIONS: 1. Cu yd bank measurement per hr
2. Suitable depth of cut for maximum effect
3. No delays
4. 90-deg swing
5. All materials loaded into hauling units

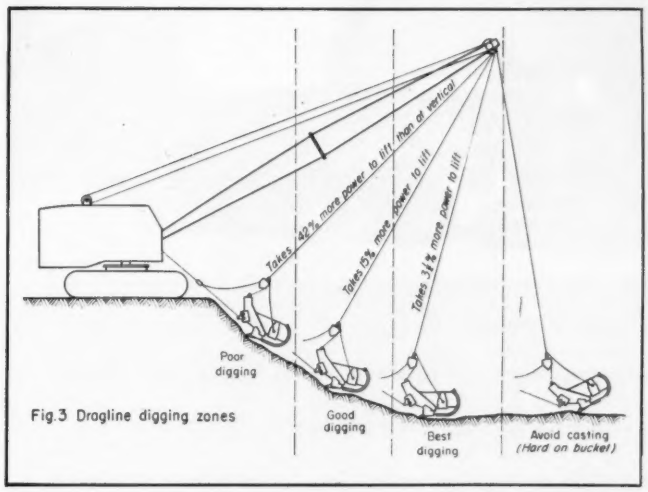
strata, the bucket can be loaded by pulling it up the slope, digging a thin layer through a considerable distance. Otherwise the bucket should be pulled only through enough material to fill it; then lift it out of the ground and start the swing.

Quick loading and immediate hoisting will produce the most yardage. The most efficient digging area is under the boom-point, not close to the machine. When the bucket is lowered after dumping, it already is out directly below the boom point as shown in *Fig. 3*. Any time wasted in pulling the bucket toward the machine before starting to dig is lost production time, unless this pulling is accomplished during the return swing.

terials dig easier in horizontal layers.

Handle the bucket carefully. Buckets are built as light as possible to get a maximum payload and are not intended to be dropped. Several weights of buckets in each size are available for various classes of service, but careful handling of even the heaviest types will pay dividends. Bucket lines should be kept taut during lowering, but when the bucket is digging, the hoist line should barely support the rigging. After dumping, it should be righted and carefully lowered to the digging face.

The only times it should be lowered in a vertical position against the arch are those few passes when it may be necessary to dig down into a new cut. When working under water, even more care should be exercised in lowering to prevent bulging the bucket bottom upward. Slapping the water surface can cause a heavy impact on the bucket bottom.


Takes 42% more power to lift than at vertical
Takes 15% more power to lift
Takes 3½% more power to lift
Poor digging
Good digging
Best digging
Avoid casting
(Hard on bucket)
Fig.3 Dragline digging zones

The bucket should fill in a travel of 2 or 3 bucket lengths. When full it should not be pulled a foot more. Further dragging of the bucket merely wears out the bottom, wastes power and wastes production. If the bucket does not completely fill in 2 or 3 lengths of travel, it may be best to lift and swing it then, rather than continue to drag it just to get a slightly larger load.

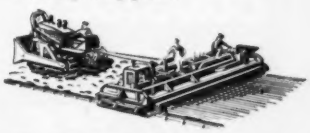
As in shovel operation, the machine should be moved in frequent (but somewhat longer) moves to maintain the digging zone at the most favorable distances. This would be just inside the boom-point radius. A slight uphill pull may aid in filling the bucket, but the grade in the digging area should not get too steep, because less power is required and most ma-

When the pit becomes so deep that the drag cable begins to cut into the bank, the machine should be moved back to take off a few upper layers and then moved forward again to complete the digging at the lower depth.

It is better to move up than to cast the bucket. With casting, the bucket is harder to control and bucket life is shortened. In casting, the bucket must be kept swinging to keep it out beyond the boom-point radius, and unless the operator is very skillful and careful, he will strike the ground with

(Continued on page 99)

Good fighters have *power in reserve*, and so does your tractor when it's equipped with a Carco Winch. On a towing job — pulling stumps or old piling, rescuing stuck equipment, moving buildings or materials, assisting a ditcher or subgrader — the Carco Winch actually *doubles* the tractor's normal pulling power.



The Carco Winch gives your tractor added *reach*, saves wear and tear on the tractor, makes it easier to take hold of any load, far or near. For full data on the Carco model that will give your tractor a real "Sunday punch", see your tractor dealer or write nearest Carco factory branch.

CARCO®
WINCHES
FOR ALL INDUSTRIAL TRACTORS
PACIFIC CAR AND FOUNDRY COMPANY
RENTON, WASHINGTON — Branches at Portland, Oregon, and Franklin Park (Chicago), Illinois

WHY NOT LOAD THE CHEAPEST WAY?

BARBER-GREENE

MODEL

82-A

CRAWLER-MOUNTED BUCKET LOADER

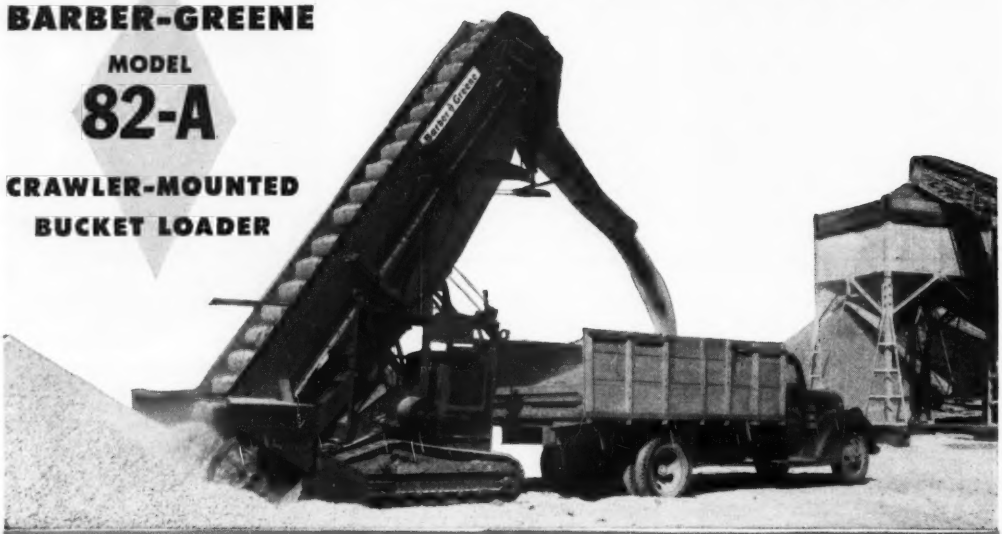


FIGURE
CONSIDER
COMPARE
AND SEE

your present loading cost . . .

wasted truck time . . . wasted man-hours . . . special operator . . .

the constant 3 cu. yd. per min. loading of the B-G 82-A . . .

the savings in man-hours and money possible on your loading jobs with a B-G 82-A Bucket Loader.

A B-G 82-A Bucket Loader is by all odds the cheapest and fastest method of loading free-flowing materials into trucks. Exhaustive cost analyses made throughout Barber-Greene's over 30 years' experience (during which B-G Loaders handled over a billion yards of material) have consistently proved this.

Simple controls mean that each driver can load his own truck . . . no need for an expensive operator. Each truck can be loaded to full capacity without spillage . . . without truck damage or undue truck wear.

Crawler-mounted, the 82-A provides positive traction in all kinds of going—on soft or muddy bases—on spots where pneumatic-tired rigs can't operate.

Barber-Greene

AURORA, ILLINOIS, U.S.A.

EARTHMOVING . . . Cont. from p. 97

a glancing blow which is hard on the bucket and its rigging. Impacts of any kind are far more damaging to buckets than the heaviest line pulls.

If material sticks in the bucket, the payload is reduced, but never strike the bucket against solid objects to knock this material loose. Short chains fastened inside the back corners sometimes help to remove sticky material. Bucket life reflects the operator's ability.

Bucket teeth need to be sharp, and spare sets of teeth should be on hand for frequent changing. It is better to change the teeth often, doing a little build-up with hard-facing welding each time they are changed, rather than let them go to the point where it takes a lot more welding. Digging efficiency is kept up with sharp teeth. Hard-facing the bucket lip between the teeth to a good cutting edge also helps.

Two Buckets Best

Cracks that may have been caused by accidental abuse should be welded promptly, because a crack once started moves fast. A spare bucket may be desirable where the going is hard, so that bucket maintenance and repair can be done during regular shift hours and without delaying excavator output. Two buckets kept in good repair should outlast several buckets purchased and worn out one at a time; and the saving of premium overtime pay for off-shift repair labor may go far toward paying for the spare bucket.

• **Dragline machine adjustments**—The hoist clutch should be adjusted only tight enough to lift the full bucket without slipping, to keep this clutch easy to operate. But the drag-clutch adjustment must be made with greater care. The usual tendency is to set up the drag clutch so it will never slip, so that the bucket can be used to rip out large rocks or stumps. That is poor practice because it decreases cable life and machine life. Drag-cable life may be only a few hours or even a few minutes because of improper adjustment.

Overtightened clutches also overstrain unnecessarily the drum shaft, its bearings and the gearing in the machine. When engine speed is pulled down quickly by the bucket catching on a solid obstruction, dragline pull may go up to 2 or even 3½ times the full horsepower line-pull of the machine.

(Continued on next page)

We got the "hang" of it
from the Hartford engineer

(Based on an actual occurrence)

Putting in roads is our business, *not* taking out bridges. Still, on one recent, big repaving job, we had to take out several. Going at it with pick-axes, one plank at a time, we were making slow work of it. Dangerous work, too, for picks demand elbow room—elbow room we didn't have!

Seeing the spot we were in, the Hartford engineer suggested that we could do the job faster and more safely with the aid of a crane which was standing idle nearby. "You can cut your tie-bars, put slings around whole sections of planking, and hoist away," he pointed out. Having got the "hang" of it from the Hartford, we got that bridge out of there fast. We saved time and money, and no one got hurt.

Hartford insures and bonds all types of construction work. And Hartford engineers have accumulated a vast knowledge of the latest and best construction ideas and short cuts. From their broad background of experience in contracting operations, Hartford engineers can often help you uncover new operating efficiencies, prevent accidents, reduce insurance costs.

With this assistance, you may be able to increase your profits measurably. Ask your Hartford Accident and Indemnity Agent or your insurance broker about this "plus-feature" of Hartford protection.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

*Reg. U.S. Pat. Off.

A. Leschen & Sons Rope Co., St. Louis 12, Missouri

In business *only* to make wire rope — *better* wire rope — since 1857.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

Since the breaking strength of the drag cable is usually only 3 or 4 times the full power-line pull, it is easy to break even a new cable after a few overloads of this type. The operator, mechanic and supervisor must see to it that the drag clutch load-release devices are set to slip before the engine stalls too quickly.

A guide would be to make this setting so the engine continues to run for at least 5 to 8 sec after the bucket has caught on an obstruction. These main hoist and drag clutches will stand considerable slipping without damage, but they should not be permitted to slip under normal loads because they would overheat in a few minutes, in spite of their large heat-radiating capacity.

Bucket hitches, chains and dump ropes permit some variations in adjustment. Bucket manufacturers furnish instructions as to the best adjustment of their particular design. For hard digging, the load chains should be hooked high, but for soft, deep digging the load chains can be hooked lower by changing hitch-plate positions. The dump line length determines the carrying position of the loaded bucket. The bucket should carry with lip only slightly higher than the back for most materials.

• **Clamshell bucket operations**— As in the selection of dragline bucket size, clamshell bucket size depends upon boom length and machine-lifting capacity at the desired operating radius. Size is limited further by the manufacturer's maximum recommended single-line load for clamshell service. General experience seems to limit the clamshell load to about 50% of the full engine power-line pull at the shorter boom radii. Machine stability determines the allowable loaded-bucket weight at the longer boom radii. *Fig.* 4 illustrates clamshell attachments.

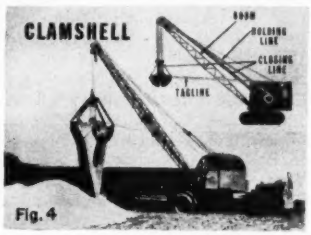


Fig. 4

Several weights of clamshell buckets are available. Light re-

(Continued on page 103)

Why MARLOWS are the WORLD'S GREATEST Contractors' Pumps

ONLY A MARLOW HAS THESE FEATURES:

FASTEST AND HIGHEST	A Marlow primes faster and on higher suction lifts than any other self-priming centrifugal pump.
PUMPS MORE WATER	Will pump more water per gallon of fuel. Operates at easier engine speeds.
NON-CLOGGING	Self-cleaning construction enables a Marlow to handle dirtier water.
NEW MECHANICAL SEAL	Far more dependable and long-lived than any other contractor's pump seal.
SIMPLE AND STRONG	Requires practically no attention or maintenance.
LASTS INDEFINITELY	After long hard use, replace two inexpensive parts and pump is restored to full original efficiency.
LARGEST SELECTION	Models in all AGC ratings: 4M through 240M, 1½"-10"— plus many other models for special use.

MARLOW — EVERYWHERE

Sold and serviced by leading construction equipment distributors in 48 states and principal foreign countries. Backed by the Marlow organization — the largest of its kind.

"These new Marlows are the greatest pumps ever," says Mr. Harvey Reeves, above, pump expert of Foundation Equipment Corporation, Long Island City, New York.

MARLOW PUMPS

RIDGEWOOD, NEW JERSEY

Manufacturers of the World's Largest Line of Contractors' Pumps
Including the Famous Marlow Mud Hogs

Keeping a road-razor honed...

Up to six times longer
with Airco Hardfacing Alloys

Grading, the final touch to highway construction . . . or the end of the back-fill on any construction job . . . poses tough problems for 'stay-on-the-job' equipment.

Rocks and low-grade fill lie ready to chew the finest scraper blades . . . unless they are pre-protected with one of the many Airco Hardfacing Alloys available for extending the "sharpedge" life of your equipment *as much as six times longer than ordinary scraper blades.*

But no matter what *your* wear problem, it will pay you to look into the more than twenty Airco Hardfacing Alloys for your tools and parts. Any Airco representative will be glad to give you complete information. Write or call your local Airco Office today.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT

AIRCO®

DEALERS AND OFFICES IN PRINCIPAL CITIES

AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY • AIR REDUCTION PACIFIC COMPANY

REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL

DIVISIONS OF AIR REDUCTION COMPANY, INCORPORATED

EARTHMOVING . . . Continued from page 100

handler buckets without teeth are best for loading loose material from stockpiles, barges, railway cars, and the like. Heavy buckets with long, sharp teeth are best for excavating.

In closing the bucket, the closing line tends to lift the bucket out of the material. Thus the harder the material, the more tendency there is to lift the bucket out. Therefore the greater the weight, the greater the digging power. Also, when the bucket is reeved with more parts of line in the closing arm or block, less line pull is required to close the bucket and thus there is less tendency to lift it out of the material. General purpose buckets are of average weight as a compromise between the rehandler and digging types.

Clamshell buckets must not be dropped too hard into materials, even if sticky. The bucket should be opened fully when lowered, so that there is no danger of bending the teeth inward. In opening the bucket, do not allow the bumpers to strike too hard when the bucket is fully open, to reduce impact and shock on hinges and arms.

Lubricate Often

Because clamshell bucket bearings frequently are submerged or covered with abrasive material, they should be lubricated more often than other parts to flush out dirt from the bearings.

The clamshell crane works best on fairly level footing so that the swing clutches will swing the boom and bucket uphill on either the loaded or empty swing. Position the machine so the bucket can be discharged at the same radius as it is filled, reducing the amount of booming up and down, which is a time waster.

Taglines are used to prevent clamshell-type buckets from spinning and fouling the two hoist lines. Tagline tension can be maintained by a counterweight, a spring-powered reel mounted on the boom or by a slipping friction clutch and drum. Tension can be varied at will with some slipping-clutch types to drift the bucket in toward the machine, if necessary.

• **Clamshell machine adjustment**—The hoist clutches of a clamshell crane can be set more lightly than for any other attachment. In operation, the closing-line clutch is engaged first. Some operators prefer to have this clutch set so loosely that it will not lift the loaded bucket out of the material. Then when the bucket fully closes, it will not lift the load until the holding-line clutch is engaged. This prevents the holding line from getting slack in the event its clutch is not engaged at just the right moment.

If the holding-line drum should be slightly larger than the closing-line drum diameter, it is desirable also to have the holding-line clutch set so that it will not quite lift the full bucket by itself. Part of the tension then is on each of the two lines during the entire hoisting operation to prevent one line from becoming slack—which might allow it to spin around the other. The clutch attached to the larger drum will then slip a little so that both lines are always taut. It is preferable that the closing line drum be slightly the larger of the two, if a difference exists.

For the clamshell itself, the number of parts of the closing line can be varied on some buckets. Faster closing is obtained with less parts of line. If the bucket does not fill, more parts will be required. Counterweights also may be added to improve the digging.

• • •

Ed. Note: The seventeenth article in this series will appear in the May issue.

34-E paver under batch plant gives low-cost central mixing

Here's a contractor who knows how to cut costs. His batch plant, plus a 34-E Paver gives him high-quality central-mixed concrete for a million dollar Kresge warehouse. When this 10,000 yard job is done, he'll move the whole plant to a new location for a highway job.

On both jobs, he'll use Dumpcretes. They'll save him time and money.

They charge fast. They travel fast. If you want a quick pour, they'll give you four yards in 60 seconds. And you can place *direct*—either through the long 13-foot chute, or into forms five feet high or into buggies, barrows or buckets.

They cost less—only ⅓ as much as a truck mixer. There's practically no repair and maintenance—the few moving parts are simple and rugged. Dumpcretes are money-in-the-bank for you. To get the details on 2, 3 and 4 yd. sizes, send the coupon today.

Please send booklet
"12 Ways To Set Up
For Central Mixing"

Name_____

Firm_____

Address_____

DUMPCRETE

DIVISION

MAXON CONSTRUCTION COMPANY, INC.

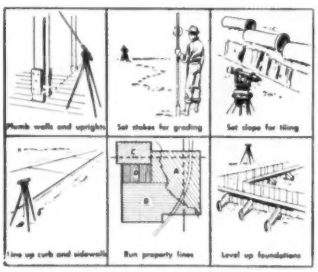
633 TALBOTT BUILDING
DAYTON 2, OHIO

White Universal Level-Transit...

the most versatile instrument you can own!

YES, the White "Universal" Level-Transit is the most practical, complete instrument on the market. Now available in a new improved model — the No. 3000 — with internal focusing, coated optics, guarded vertical arc. In fact, every feature to assure you lifetime durability and accuracy. And the price is *only $185**, complete with tripod. See your dealer, or write DAVID WHITE COMPANY, 343 W. Court Street, Milwaukee 12, Wisconsin.

Indispensable for all these jobs and many more



DAVID WHITE COMPANY

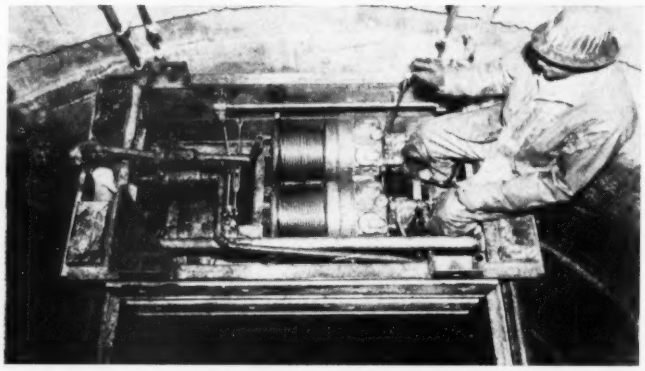
We offer the most expert REPAIR SERVICE on all makes, all types of instruments.

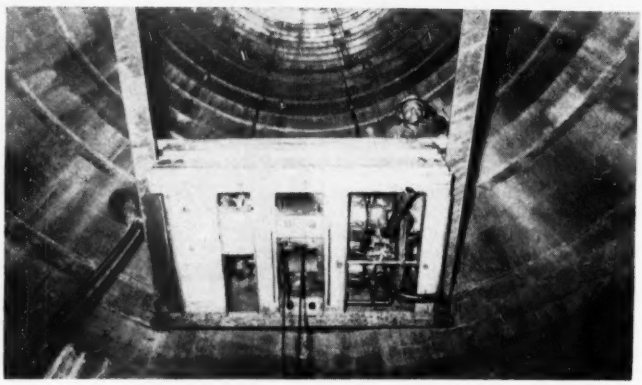
**Price subject to change without notice.*

7195

Pardon Us!

...Shaft Muckers ARE Available





RIDDELL SHAFT-MUCKING MACHINE consists of air hoist traveler riding rail beams braced across shaft. Rail beams are hung from cables that lower whole assembly as shaft sinking progresses. Traveler spots bucket by moving back and forth across shaft.

AFTER SEEING the crude Rube Goldberg home-made shaft mucker dreamed up by Perini-Walsh on their Ontario Hydro tunnel job at Niagara Falls (CM&E, November 1951, page 59), we inquired: "Why doesn't some smart manufacturer come out with an efficient shaft-mucking rig?" We couldn't understand why heap-savvy guys like Lou Perini and Jess Glaeser would monkey around with that cumbersome rig if anything else were available.

Whammo! We got it in both eyes, first from Blaw-Knox and then from Bucyrus-Erie. When the stars cleared from our foggy brain, it dawned upon us that these companies were telling us in gentle machinery man's language that smart manufacturers had done this very thing long, long ago.

So, swallowing our pride—and a lot of gritty shaft muck with it—we tell their stories:

Blaw-Knox's bucket department manager chides us: "Why my dear man, don't you know that J. Murray Riddell, Mining Engineer, P. O. Box 144, Houghton, Mich., developed, and has had on the market for a number of years, the Riddell shaft mucker (U. S. patent 2,326,-172)?

"From the number of repeat orders Blaw-Knox clamshell buckets that we have shipped to internationally famous mining companies for use with the Riddell shaft muckers, it would seem that the

(Continued on page 106)

New Ultra-modern Low-Friction truck engines give you

Gas Savings UP TO 14%

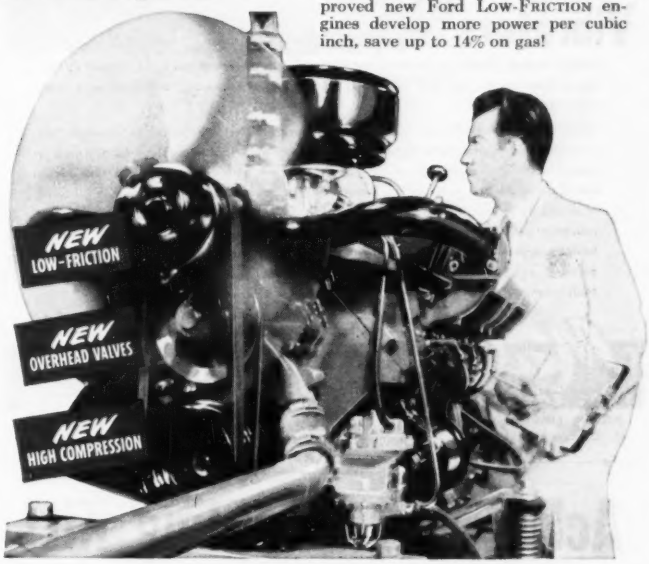
Designed for today's Speed Hauling needs!

DYNAMOMETER TESTS like this, over 50,000 hours on one engine model alone, proved new Ford LOW-FRICTION engines develop more power per cubic inch, save up to 14% on gas!

New LOW-FRICTION design LIBERATES POWER ordinarily held "captive" by engine friction! IT SAVES GAS! It saves wear!

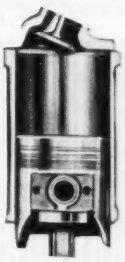
Good news for truck users! Ford's new, ultra-modern LOW-FRICTION truck engines break away from the traditional "European" long-stroke piston design. They introduce a friction-reducing *short-stroke* in three completely new engines in Ford Trucks for '52.

Ford LOW-FRICTION design incorporates new direct-breathing OVERHEAD-VALVES . . . gives you new HIGH-COMPRESSION, for extra wallop to meet today's Speed-Hauling needs. Here's truck engineering that your Ford Dealer will be proud to tell you more about today!



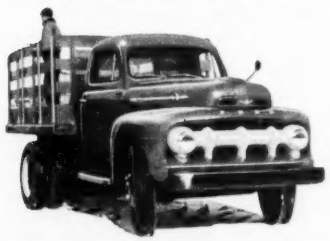
NEW LOW-FRICTION DESIGN

OVERHEAD VALVES for deeper direct "breathing"!
HIGH-COMPRESSION punch with regular gas!
SHORT STROKE cuts piston travel up to 20%!



Friction reduced in many ways: Autothermic Pistons have built-in clearance control. **Precision-molded Alloy Crankshaft** cuts friction and wear at journals. **New Full-Flow Oil Filter** screens every drop of oil every time around. **Result:** Up to 30% cut in friction "power-waste" . . . the big reason why Ford can promise gas savings up to 14%!

Availability of equipment, accessories and trim, as illustrated, is dependent on material supply conditions.



For '52 Ford offers a full line of trucks from half-ton Pickups to 20-ton (G.C.W.) BIG JOBS. 5 great engines from 101 h.p. to 155 h.p., V-8 or Six. 3 new LOW-FRICTION engines, plus famed V-8 (now 106 h.p.) and Big Six (now 112 h.p.)!

FREE

MAIL THIS COUPON TODAY!

Ford Division of FORD MOTOR COMPANY
3250 Schaefer Rd., Dearborn, Mich.

Please send me without charge or obligation, complete details on the new Ford Trucks for '52 and the five great Ford Truck Engines!

FULL LINE ☐ HEAVY-DUTY MODELS ☐
LIGHT MODELS ☐ EXTRA HEAVY-DUTY MODELS ☐

Name _____
(PLEASE PRINT PLAINLY)

Address _____

City _____ State _____

Check here if student ☐

FORD TRUCKS for '52 cost still less to run!

Produce Better Concrete Faster at More Profit for you . . . with Mall Concrete Vibrators

Couple better concrete through stiffer mixtures, using less cement . . . to faster operations from job to job, and you have the ideal profit formula, achieved with Mall Concrete Vibrators.

Mall Vibrators consistently deliver better concrete through better compaction, increased density and water-tightness. Such heavy-duty features as the rugged power plant, a steel wire vibrator shaft and an internal housing liner with a continuous bearing surface are contributing factors. But, combine these well-engineered features with Mall's lighter weight and easy portability, and you complete the picture. You not only produce *better* concrete at profitable *savings* in cement — you produce better concrete *faster* at savings in time and labor. *Double savings that meet competition, yet put more profit in every contract.* Write today for information about Mall gasoline, electric and pneumatic concrete vibrators.

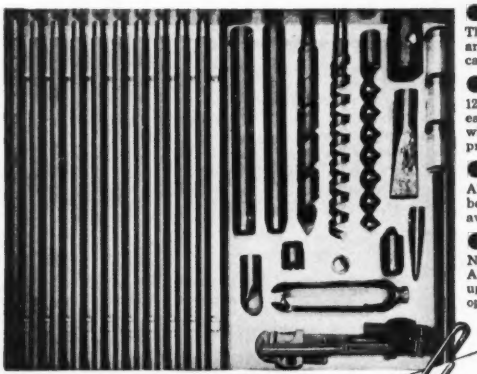
40 Factory-Owned Service Warehouses, Coast to Coast, To Serve Our Customers and Thousands of Dealers.

Mall TOOL COMPANY
7704 S. Chicago Avenue
Chicago 19, Illinois

Clip and mail this CHECK LIST for details

Acker Soil Sampling Kit!

Everything you need for accurate sub-surface information



● **PORTABLE**
The Acker Kit is compact and light enough to be carried in your car.

● **VERSATILE**
12 different "all-purpose" earth and soil tools that will recover samples from practically any material.

● **HANDY**
All tools fit into a sturdy steel box, where they are always available for instant use.

● **INEXPENSIVE**
Nothing to get out of order—All tools are built to stand-up under the most rugged operating conditions.

Hundreds of these versatile testing kits are in use all over the world testing clay and kaolin pits, gold bearing sands, subgrades for highway and airfield runways, and many other subsurface strata.

Write today for prices and Bulletin 26CME

Over 30 years of experience in the manufacture and development of Drilling equipment.

ACKER DRILL COMPANY, INC.
SCRANTON 3, PA.

SHAFT MUCKERS . . . Cont. from p. 104

ON MUCKING END of Riddell rig Blaw-Knox ⅜-yd clamshell equipped with heavy counterweights and special rock-digging teeth is manipulated by double air hoist.

mucker has operated successfully in at least 100 applications.

"The enclosed photographs give an excellent idea of the Riddell mucker and its operation. The clamshell is our Blaw-Knox size 663, rated ⅜ cu yd, equipped with bottom, side, and corner teeth; also center and scoop counterweights. The views are of shaft No. 7, City Tunnel, Boston's Hultman Aqueduct, taken in June, 1947."

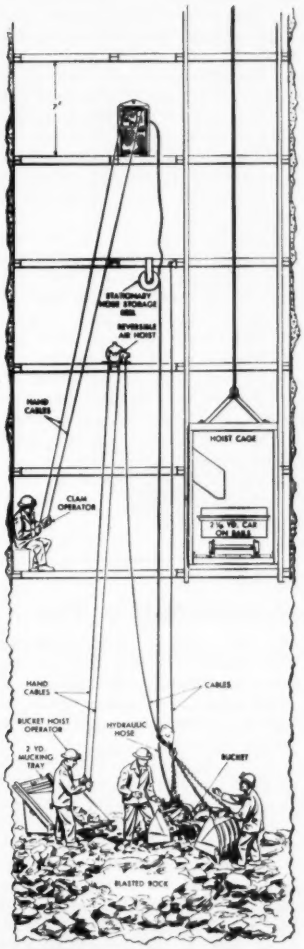
Look at the pictures and read the captions to see how this machine works. We heard about the Riddell mucker on the Boston job, but somehow were led to believe it, too, was a specially built rig. Now we know better. Thanks for the education, Arnold.

Wallop number 2 comes from Reese Thornton of Bucyrus-Erie Company, South Milwaukee, Wis. He sends us the dope and a diagram of B-E's Hydromucker, and the comment: "This hydraulically operated mucking clamshell has been available for several years, and we believed that the field was well acquainted with it." Maybe so, except for ignoramuses like ye Ed, Perini-Walsh and scores of contractors we've seen mucking out their shafts by hand.

Here's the low-down on the Hydromucker, according to Reese Thornton:

"The recently improved hydraulically operated 3/8-yd clamshell makes mucking fast and simple. The heavy-duty 1,630-lb bucket with alloy steel lips and teeth provides the resistance to wear necessary for real hard-rock digging.

"In normal operation, the bucket scoops up a load and dumps it on a tray which is placed near the digging operation. When the tray is filled, the hoist-operated lift rope is removed from the Hydromucker bucket and attached to the loaded



BUCYRUS-ERIE HYDROMUCKER is hydraulic-operated clamshell bucket handled by air hoist set on struts across shaft. Hydraulic pump supplying power for opening and closing bucket rides on another set of struts, and is remote-controlled. Bucket loads on to a tray, then bucket load line hook is transferred to tray for hoisting to car in cage above.

M.S.A. NATION-WIDE SERVICE BRINGS LOCAL CONVENIENCE AND ASSURANCE TO EVERY JOB—EVERYWHERE

No matter where the job takes you, you'll find the same fast, dependable M.S.A. service you've become accustomed to in your local operations ready and waiting for you just around the corner. Our nation-wide network of 68 service centers means you're always "in touch" with quality safety equipment, trained personnel.

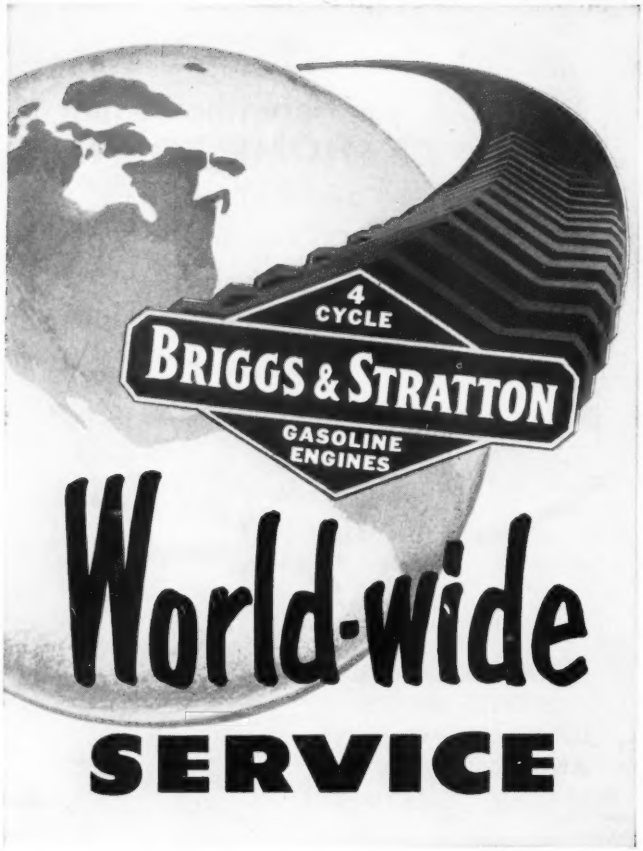
Next time you have an out-of-the-way job coming up, map out your safety sources with M.S.A. A complete list of our offices is at the right.

Call the M.S.A. man on your every safety problem . . . his job is to help you.

M S A
SAFETY EQUIPMENT HEADQUARTERS

MINE SAFETY APPLIANCES COMPANY
Braddock, Thomas and Meade Sts.
Pittsburgh 8, Pa.
At Your Service:
74 Branch Offices in the United States and Canada

AKRON, OHIO
ALBANY 7, NEW YORK
*ATLANTA, GEORGIA
*BALTIMORE, MARYLAND
BEAUMONT, TEXAS
BIRMINGHAM, ALABAMA
BISBEE, ARIZONA
*BLUEFIELD, WEST VIRGINIA
*BOSTON, MASSACHUSETTS
*BUFFALO 8, NEW YORK
BUTTE, MONTANA
*CHARLESTON 1, WEST VIRGINIA
CHARLOTTE, NORTH CAROLINA
*CHICAGO 10, ILLINOIS
CINCINNATI 2, OHIO
CLARKSBURG, WEST VIRGINIA
*CLEVELAND 6, OHIO
DALLAS 4, TEXAS
DAYTON 9, OHIO
DENVER, COLORADO
DES MOINES, IOWA
*DETROIT 3, MICHIGAN
DULUTH 3, MINNESOTA
EBENSBURG, PENNSYLVANIA
FAIRMONT, WEST VIRGINIA
GRAND RAPIDS, MICHIGAN
HARLAN, KENTUCKY
HARTFORD, CONNECTICUT
HAZARD, KENTUCKY
*HOUSTON 4, TEXAS
INDIANA, PENNSYLVANIA
INDIANAPOLIS 18, INDIANA
JOHNSTOWN, PENNSYLVANIA
KANSAS CITY 3, MISSOURI
LOGAN, WEST VIRGINIA
*LOS ANGELES, CALIFORNIA
MILWAUKEE 13, WISCONSIN
MINNEAPOLIS 3, MINNESOTA
MOUNT HOPE, WEST VIRGINIA
NASHVILLE, TENNESSEE
*NEWARK 2, NEW JERSEY
*NEW ORLEANS, LOUISIANA
*NEW YORK, NEW YORK
NORTON, VIRGINIA
PEORIA, ILLINOIS
*PHILADELPHIA 3, PENNSYLVANIA
*PITTSBURGH 8, PENNSYLVANIA
PIKEVILLE, KENTUCKY
PORTLAND 5, OREGON
POTTSVILLE, PENNSYLVANIA
RICHMOND, VIRGINIA
ST. CLAIRSVILLE, OHIO
*ST. LOUIS 5, MISSOURI
*SALT LAKE CITY 1, UTAH
SAN ANTONIO, TEXAS
*SAN FRANCISCO 3, CALIFORNIA
*SEATTLE 4, WASHINGTON
SPRINGFIELD, ILLINOIS
SPRINGFIELD, MASSACHUSETTS
SPOKANE, WASHINGTON
SYRACUSE, NEW YORK
TERRE HAUTE, INDIANA
TOLEDO 12, OHIO
*TULSA 3, OKLAHOMA
UNIONTOWN, PENNSYLVANIA
WASHINGTON 6, D.C.
WILKES-BARRE, PENNSYLVANIA
WILLIAMSON, WEST VIRGINIA
Stocks carried at these locations.



THE GREATEST SERVICE ORGANIZATION OF ITS KIND IN THE WORLD . . .

Nearby there is a Briggs & Stratton service organization, factory trained and supervised, and with a stock of *genuine* Briggs & Stratton engine parts ready to serve you. These organizations offer complete Briggs & Stratton engine service — tune up, repair, and rebuilding with original Briggs & Stratton parts.

Only Briggs & Stratton maintains such complete, world-wide authorized service facilities. Briggs & Stratton Corporation, Milwaukee 1, Wisconsin, U.S.A.

In the automotive field, Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

tray, which is then dumped into a skip or car and hoisted to the surface.

"On one job, cuts for blasting were deepened from 7 ft to 9 ft, and output was increased 35% using the Hydromucker and less hand labor than was needed previously.

"The hydraulic action supplied by two 6-cylinder axial-style piston pumps, each delivering pressures of 3,500 psi and providing ample closing pressure at the teeth, causes the bucket to bite down into muck rather than draw away during closing like rope reeved buckets. There is no vertical line pull during digging.

"The sturdy, compact power unit is skid-mounted and equipped with a lifting eye for easy handling. The 15-hp splash-proof motor is equipped with a rain-tight starting switch. Power to pumps is transferred through adjustable V-belts."

There you have it, all of both barrels. The final bump came with this comment from Joy Manufacturing Co., without further explanation: "We showed a shaft mucker in our catalogs more than 20 years ago, then forgot it."

Crawling out from under the muck-pile and wiping the grime off our red face we humbly opine: "Why don't they tell the world about these things?" Also, we have found mighty few contractors reading mining papers.

Believe It or Not

WE ARE INDEBTED to the Kansas City Chapter of the AGC for this account which reads like one of those comedies where a trivial incident mushrooms until chaos reigns supreme.

While placing a ladder in a trench, a workman punctured his ungloved hand on a splintered rung. The first stab of pain from the injury caused the worker to drop the heavy ladder, which fell and knocked out some key members of the trench bracing. This brought about the collapse of a 35-ft section of the trench in turn. some ground gave way under a mobile crane causing it to tumble into the excavation with damage to a brick sewer.

A crew of 15 men was required to reorganize the job, and the contractor finally was $4,700 out of pocket.

WIRE ROPE

This is the most economical rope we've ever made for construction equipment

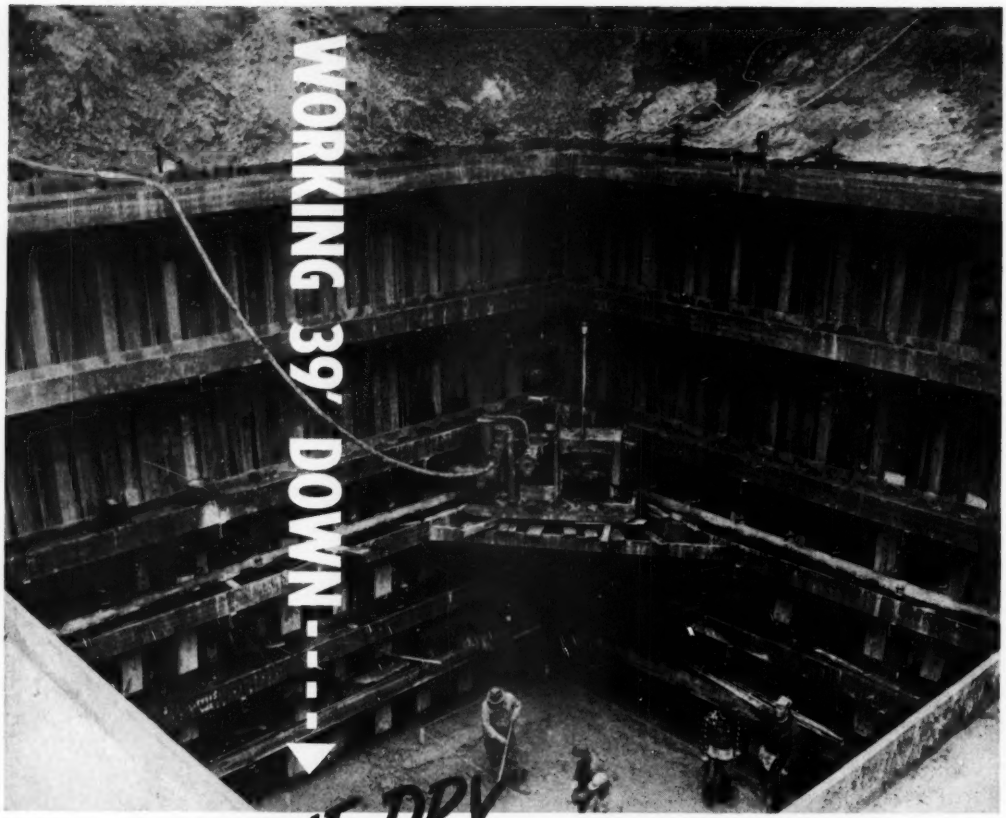
ROEBLING is the best known name in wire rope. That's partly because we were the first wire rope maker in America. But more than that, we've always led in developing better wire and better rope for every purpose.

Today's Roebling Preformed "Blue Center" Steel Wire Rope is the best choice for efficiency and long life on excavating and construction equipment. This rope has *extra* resistance to crushing and abrasion . . . stands up under rough going. It saves you time and cuts costs.

There's a Roebling wire rope of the right specification for top service on any job. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 701 ST. CLAIR AVE, N. E. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, N. J.



A Moretrench Wellpoint System keeps 31 feet of water from causing trouble on this deep excavation for a plating pit in Michigan. Material consists of very fine, silty sand and hard clay.

Wellpoints so effectively reduced hydro-static pressure that the use of I-beam whalers was sufficient, eliminating cross bracing. Another time and money saver.

CATALOG ON REQUEST

Progress on a wet job depends on the pumping system. That's why experienced contractors again and again order Moretrench for action — "in the dry".

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Canadian Representative: Geo. W. Brothers Limited, Toronto, Ontario

On-the-Job
CONTRACTOR-LABOR RELATIONS

by LEON B. KROMER, JR.

Stabilization Enforcers at Work

INDICATIONS ARE that contractors must keep a cautious eye, not only on the wage rates they pay members of the building trades, but also on the salaries at which they hire supervisory and engineering personnel.

Hard on the heels of the crackdown by WSB's Regional Enforcement Commission in the case of alleged illegal wage payments to bricklayers by a contractor on the V.A. hospital at Ann Arbor, Mich. (see below), comes an announcement by the Office of Salary Stabilization that it is conducting a nationwide survey of personnel-hiring practices by engineering firms and industrial employers. The investigation stems from numerous reports of widespread "job hopping" and "pirating" in the employment of engineers, particularly as it involves the sharp bidding for recent graduates.

Future Action, Maybe

Data resulting from the survey will be used, if necessary, as the basis for enforcement action. In a statement that hints at future action, John D. Cooper, Executive Director of OSS, stated, "The recruitment of engineers by engineering contracting companies for jobs requiring no high professional skill, on a fee basis, presents a particularly aggravating problem." He said that the Salary Stabilization Board appreciated that the industry has been plagued by a shortage of engineers but warned that violations of wage stabilization ceilings is not the answer.

The Wage Stabilization Board's National Enforcement Commission has taken under consideration the case involving allegedly illegal rates paid to brickayers on the V.A. hospital project at Ann Arbor, Mich. In his appeal against the stiff penalties levied by the Region-Enforcement Commission, the contractor maintained that denial of his request for continuance of the Detroit hearing was arbitrary, depriving him of testimony from a key witness; that insufficient time had been allowed for filing briefs.

He argued that there were no regulations setting up area rates, and questioned the legality of having the V.A. (the contracting agency) withhold $40,000 of his lump-sum contract as a penalty. The hearing at Washington was held late in February, but the National Enforcement Commission has not yet indicated when its decision is expected.

In the meantime, a contractor in Denver faces a similar charge by counsel for the Regional Wage

(Continued on page 114)

STANDARD STEEL PRESSURE DISTRIBUTOR

FULL CIRCULATING SPRAY BAR GIVES UNIFORM SPREAD OF MATERIAL THROUGHOUT LENGTH OF BAR . . .

SIMPLIFIED PIPING PERMITS FAST LOADING AND LAYING . . .

25% More Asphalt shot per day! Faster loading! No delays Starting! Instant cleaning at end of run! These are facts known to every operator of **Standard Steel Pressure Distributors!** Why? Because of the simplified piping in this equipment! The full circulating spray bar contains submerged valves which are quickly heated and remain uniformly hot at each point of pouring. The throw of a single lever opens and closes all valves instantly. Every inch of the spray bar delivers precisely the same material output—lightest or heaviest bituminous material. And there are 12 other special features that make this equipment outstanding in performance. Write for catalog 424 today for complete details.

OTHER PRODUCTS

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

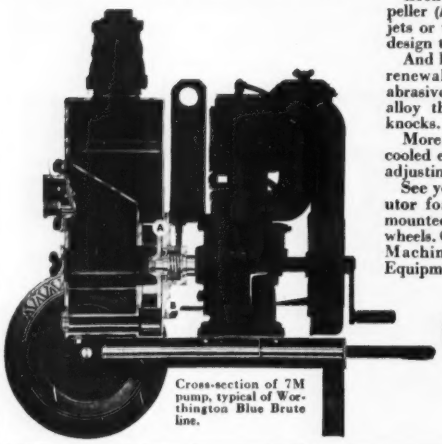
Built to the Highest Standard

PD3

Standard Steel Works, NORTH KANSAS CITY, MO.

Simplest, sturdiest, most economical contractor's pump ever built

MADE BY THE WORLD'S LARGEST PUMP MANUFACTURER



Cross-section of 7M pump, typical of Worthington Blue Brute line.

It takes Worthington's unequalled experience to give you the most in a self-priming contractor's pump.

Look—only two moving parts, the impeller **(A)** and shaft seal **(B)**. And no ports, jets or valves to clog. That's the kind of design that keeps you out of trouble.

And look at the materials. Impeller and renewable wear plates made of special abrasive-resisting alloy . . . casing is a steel alloy that defies rust, erosion and hard knocks.

More trouble-savers: easy-starting air-cooled engine . . . fully-enclosed and self-adjusting dual shaft seal.

See your nearby Worthington distributor for the A.G.C.-rated sizes, base-mounted or with steel or pneumatic-tired wheels. Or write to Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, N. J.

RUGGED LIGHT-WEIGHT PUMP

Popular Worthington 4M has earned contractors' enthusiastic OK on all sorts of jobs. Has fabricated all-steel casing to take roughest service, yet weighs less than 75 lb. Hand carriage also available.

BUY BLUE BRUTES

WORTHINGTON

H.1.9

STANG BONE-DRIES 1270′ TRENCH

Heavy rains increased the ground water hazard in the excavation of a 1270 trench 17′ below ground water level for the Norton Siphon on the Mohawk Canal, Gila Project, near Yuma, Arizona. In spite of these conditions, the 96" I.D. concrete pipe was lowered into a bone-dry trench in record time, at low cost, by using Stang Wellpoints. This is one more instance of the important part that Stang Wellpoints are taking in the excavation of irrigation canals and other sub-ground water level projects all over the United States.

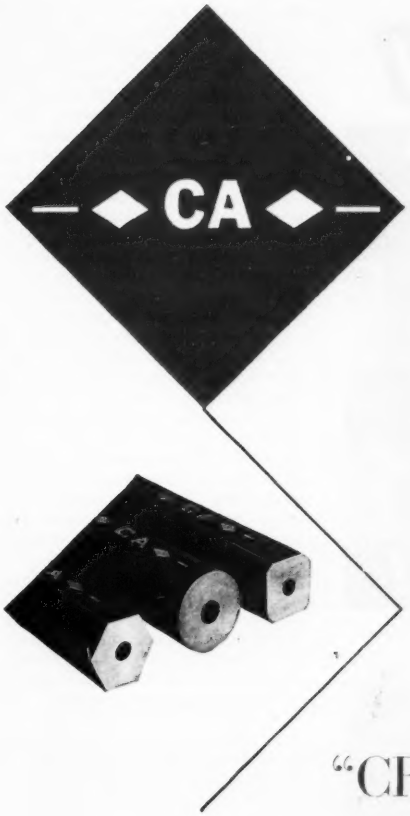
JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment

8221 Atlantic Avenue, BELL, CALIF. P. O. Box 631 Tel: Logan 5-7421

2123 S. 56th St., OMAHA, NEBRASKA Tel: Walnut 7796

NEW YORK CITY 4, NEW YORK



NEW CRUCIBLE DOUBLE DIAMOND takes drill steel out of the "CROWBAR CLASS"

this Alloy Hollow Drill Steel has greater fatigue strength... cuts bit losses... lasts longer

At last! A drill steel that's not in the "crowbar class" . . . because Crucible's new DOUBLE DIAMOND hollow drill steel is a *tool* steel . . . made by drill steel specialists to tool steel specifications. Its greater fatigue strength means lower cost per foot drilled . . . and saves those *valuable carbide bits.*

Find out first hand about this step forward in drill steel — find out how Crucible DOUBLE DIAMOND in your drilling operation does a better job . . . faster! Write for full details. Do it now!

CRUCIBLE first name in special purpose steels

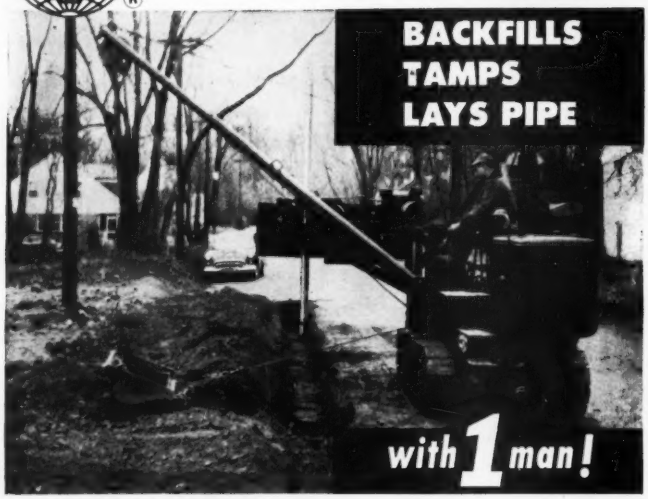
52 years of Fine steelmaking

HOLLOW DRILL STEEL

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

THE CLEVELAND 80



Tops for water, gas, sewer, telephone and power lines — leak clamp openings — highway and airport drainage . . .

LOOK AT THESE ADVANTAGES

- One-man operation — cuts labor cost, cuts need for air and hand tools.
- Fills — as it tamps — as it travels — 24 speeds in either direction.
- Backfills from either side of trench — fast, clean and smooth.
- Tamps from side or straddling trench — delivers 380 foot-lb. blow 45 times each minute.
- Lays pipe—pulls sheathing—sets valves—handles headache ball, etc.
- More maneuverable — fewer traffic hazards — better public relations.

Filling—tamping—traveling simultaneously.

Laying 8" main and pulling crossings.

No jockeying into traffic lanes here!

For complete information on the **CLEVELAND 80** see your local distributor or write for this fully illustrated folder of facts and specifications.

THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

LABOR . . . Cont. from p. 111

Stabilization Board. It is claimed he paid over-ceiling rates to bricklayers and hodcarriers early in 1951. The Regional Counsel indicated that contractors following similar practices in other cities currently are under investigation.

Don't be misled into believing that the Salary Stabilization Board's new Salary Order No. 10 gives blanket permission to pay additional compensation for extra time worked by superintendents, engineers and other employees whose pay and work is related to that of supervisors and engineers.

It does permit the continuing of a plan or practice of paying such employees additional compensation for extended overtime if such procedure was in effect before stabilization became effective (Jan. 25, 1951). If the contractor did not have such a plan, he may pay these employees for hours worked beyond the normal work week only at their straight time rate. To pay more requires SSB approval.

Sporadic overtime does not qualify a man for additional compensation. He qualifies only if he works beyond a regular work week for a substantial period of time. It does not matter that the number of additional hours worked may vary from week to week, but records must be kept of the scheduled hours and the hours actually worked.

Want to Exceed Area Rates? . . . Get Approval

WHETHER YOU OPERATE union or non-union, prior approval of the Construction Industry Stabilization Commission at Washington must be obtained before you can pay laborers and mechanics more than the rates for the appropriate job classifications prevailing in the area where the work is being performed.

If you have any doubts as to what the prevailing rates are in your area, write to the Commission's headquarters in the Department of Labor Building at Washington. Unlike its parent body, the Wage Stabilization Board, the CISC does not have regional offices or boards. All applications for increases in rates must go directly to the Commission's headquarters.

The CISC was established by the Wage Stabilization Board's Regula-

tion No. 12 to handle wages and salaries paid to laborers and mechanics employed directly at the work site. Its jurisdiction does not extend to the so-called non-manual employees, such as clerks, stenographers and timekeepers—even though employed at the site—or to laborers and mechanics in shops or building yards away from the project site. Applications for adjustments of rates for these categories must go to the appropriate regional WSB.

To expedite the handling of requests for increases over the prevailing area rates, CISC requires applicants to use what is known as "CISC Form I." These can be obtained by writing to the CISC at Washington. Applicants are advised to make sure that forms are filed out completely if they wish action on their request to be expedited. The Commission presently has a tremendous backlog of work on its hands. The more completely your Form I is filled out, the more likely it is to receive early attention. In no case will CISC consider an application unless a Form I is used. Contractors who normally bargain with the building trades unions must file a joint Form I with the unions involved when applying for a revision of rates. Non-union contractors use the same form, but in their case they file individually or as a group, whichever has been their practice in the past when adjusting wage rates.

Do You Know That:

Under revised Salary Stabilization Board regulations, you no longer must report salary increases granted under the 10% regulation or under salary plans providing for increases based upon the cost-of-living index? Detailed records of such increases must be maintained, however.

WSB has extended indefinitely its General Regulation No. 8 which permits cost-of-living increases under certain conditions. The regulation was to have expired March 1, 1952.

They'll Direct AGC Activities for the Next Year

THESE STALWART GENTLEMEN emerged from the Associated General Contractors annual meeting at Detroit as directors of the association's destiny for 1952. At far left is H. E. (Doc) Foreman, who again heads up the hustling Washington headquarters staff as managing director. Next is the new vice-president, C. P. (Gabby) Street, of the prominent building firm of McDevitt & Street Co., Charlotte, N.C. Next, hailing from the Rockies, is A.G.C. President Arthur S. Horner, head of A. S. Horner Construction Co., heavy and highway contractors at Denver. Last, hands in pockets as usual, is the doughty Scotch treasurer, Bill Muirhead, of the building firm Wm. Muirhead Construction Co., Durham, N. C. You'll never see any mink coats or deep freezers with AGC tags on them as long as Bill Muirhead is watching the money—he says they cost too much.

SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

Sizes: 18C-30C-50C-80C meet all needs.

Sure, and to get more rapid action on construction jobs, there's no pile hammer like Super-Vulcan. Delivering double the number of regular blows per minute, this mighty hammer moves from pile to pile quicker, enables you to drive more piles per dollar. It uses 25 to 35 per cent less steam than the single-acting type of hammer, is easy to operate, and has parts exposed for quick lubrication and maintenance. Yes, Super-Vulcan's many time-saving features help you complete jobs fast. It puts you way out front on time schedules, allows you to pocket substantial savings. And for extra economy, the open-type fits the same leads and uses the same accessories as the Vulcan Single-Acting hammer.

Write for more details about this fast, powerful pile hammer. Do it today!

VULCAN IRON WORKS
331 North Bell Avenue
Chicago 12 --- Illinois

More YARDS from

Check these Important Points . . .

1. **POSITIVE FORCED EJECTION** with rate of ejection always under control.
2. **POSITIVE EJECTOR GATE RETURN.** Heavy springs return gate to digging position.
3. **EXTRA LARGE APRON OPENING.** Full 78" for positive ejection of any material.
4. **SLIDING SHEAVE BLOCKS** are on center-line of scraper for longer cable life.
5. **NO APRON SHEAVES IN DIRT.** Twin cable lines run to apron equalizing hook.
6. **POWER TONGUE LIFT.** Tongue lifted by cable control unit for hitching scraper to tractor.
7. **REVERSIBLE CUTTING EDGE,** bowed 3-piece, for easy, fast digging and maximum economy.
8. **DOUBLE BOTTOM,** integral with bowl. All-welded for maximum strength and rigidity.
9. **WIDE PUSHER BUMPER,** so that tractor need not be accurately positioned when pushing.
10. **3 OPTIONAL TIRE SIZES.** To meet all flotation needs and give maximum utility.

Each Point Helps You to Increase Production!

GAR WOOD GW INDUSTRIES

NO. 522

Your Power

... with a GAR WOOD 625 24.5 cu. yd. SCRAPER

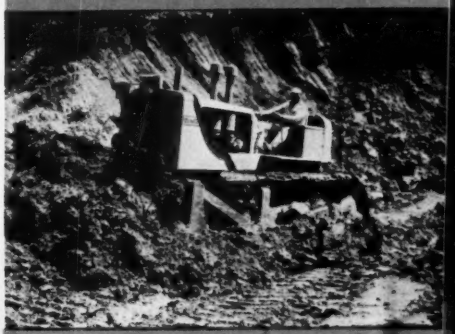
Look at the w-i-d-t-h of the 625! The wide, curved cutting-edge lets you use your power where it counts — to cut and load. Less power is used to move material back in pan. *Result:* Loads in minimum time and distance with less tractive effort . . . Live boiling action into both bowl and apron gives full heaping load every trip — reduces cost per yard . . . Forced ejection with exceptionally large apron opening gives faster dumping and controlled spreading, with rate closely controlled by operator . . . Other **GAR WOOD** scrapers in 20, 14 and 12 cu. yd. heaped capacity.

GAR WOOD INDUSTRIES, INC.

FINDLAY DIVISION • EXECUTIVE OFFICES • WAYNE, MICHIGAN

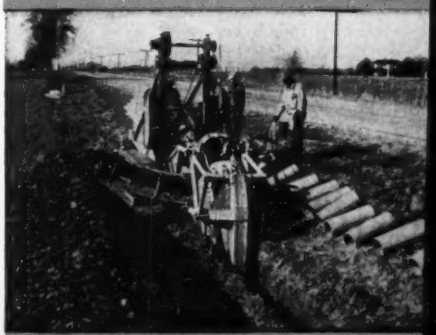
Construction Equipment: Excavators, Scrapers, Dozers, Ditchers, Spreaders, Finegraders, Truck-mounted Road Graders. Truck Equipment: Dump Truck Bodies & Hoists, Winches & Cranes, Refuse Collection Bodies, Elevating End Gates.

OTHER GarWood EQUIPMENT



GAR WOOD DOZERS — TipDozers and Dozecasters in 12 new models. Your choice of either cable or hydraulic controls.

GAR WOOD EXCAVATORS — New ¾ yd. crane-shovels, crawler and truck mounted. All operating conversions available.



BUCKEYE DITCHERS — A complete line of wheel and ladder type ditchers. Also Finegraders, Spreaders and Hi-Way Widener.

. . . A Realistic Maintenance Program

UNABLE TO MEET the regular customer demands because of material shortages and military commitments, Caterpillar Tractor Co., Peoria, Ill., has launched the most extensive maintenance program ever attempted by an equipment manufacturer to prolong the life of products now in service. The Caterpillar company worked out the program—designated "Cat Care for Longer Wear"—to the last minute detail, but it is being presented by Caterpillar dealers throughout the world. Company officials visited every domestic and many foreign distributors to sell them on the value of the program and to obtain full cooperation.

The conception and planning of the program are excellent, and the detail arrangements worked out by the company are outstanding examples of foresightedness and follow-up. Several forms of presentation are used, including advertising, direct mail, calls on customers, maintenance schools, displays and local newspaper releases.

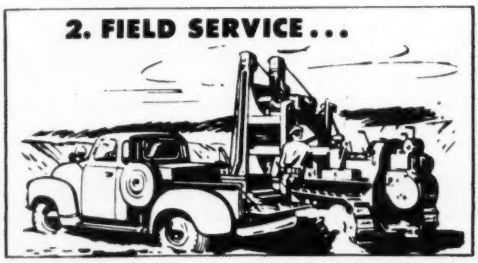
Every detail has been reproduced in a sample package, complete with order forms, handed the distributor from which he can order quantities of various materials desired at cost from the company. Caterpillar grouped the material into 38 schedules under seven main headings, designed to be produced in a campaign covering six consecutive months. Schedules are outlined on a master chart. Each item of material furnished by the company carries a sticker showing its schedule number and form number for ordering.

The following outline of schedules grouped under seven headings shows the detail in which the program has been worked out:

• **Magazine advertising**—Six color ads are available for magazines chosen by the dealer. These are plated, ready for the dealer to add his own photo, copy block and signature. One ad is to run each month of the campaign.

• **Newspaper advertising**—Six newspaper ads have been prepared, all stressing the services offered by the local dealer. These are available in mat form, complete with illustrative line drawings, copy and space for the distributor's signature. The master chart describes the theme of each magazine and newspaper ad.

• **Direct mail**—Six mailings to customers are available,



EXCELLENT CARTOON BOOKLETS are distributed as an important feature of Cat Care program. Sticker at lower left, attached to this booklet in sample kit sent to distributors, identifies item as schedule 21 on master chart, to be ordered as Form 30061.

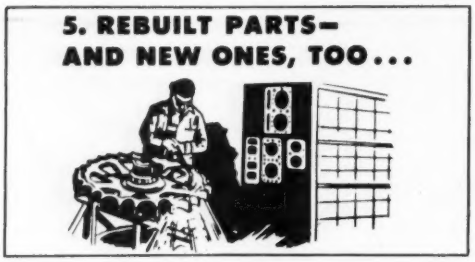
each including a letter describing some phase of the dealer's service and urging the need for maintenance, and a booklet or manual to accompany each letter.

• **Calls by dealers**—Each month dealer's representatives are to call on their customers. Topics for discussion at each call are outlined, accompanied by booklets and folders to illustrate and emphasize the talks. One talk is devoted to plans for setting up service schools to be held at the distributor's place of business. All discussions are designed to impress the importance of Cat Care to get maximum production and longer life out of existing equipment.

• **Preventive maintenance schools**—These schools conducted by the dealer for customer personnel are designed to serve two purposes: To help keep the owner's machines in productive condition, and to build up customer goodwill for the company and its products. They are held at the distributor's offices and according to salesmen's territories, if possible. Instructions are issued on how to promote and conduct a successful service school for operators and mechanics with complete suggestions as to what material to present and how to present it.

An example of the thorough details worked out by the company in advance is shown by the following suggestion for the agenda of a one-day service school:

9:00—Welcome—General Manager
9:10—Outline for the day—Service Manager
9:15—Engine maintenance (stripfilm) — Service Manager
10:10—Engine maintenance—Sound picture
10:30—Recess
10:40—Starting engine maintenance—Service Manager
11:40—Service movies—"A Thing or Two"
1:00—Service movie—"Short Cut"
1:20—Parts situation today—Parts Manager
1:30—Machine delivery situation—Sales Manager
1:40—Tractor transmission maint. (strip film)—Service Manager



2:40—Drawing for door prizes
2:45—Recess
3:00—Motor grader maint. (strip film)—Service Manager
3:30—Operation movie—"Better Blading"
4:00—Adjourn

NOTE: Use charts, cutaway models, specific examples of poor maintenance and cartoon style booklets in addition to aids mentioned above.

• **Displays**—Six suggestions for displays, to be changed every month, are given in detail. These include posters, blow-ups of ads, pennants, decals and even small stickers plugging the program to attach to all correspondence with customers and prospects.

• **News releases**—Here are six more good ideas for news releases to local newspapers and magazines, to be handed out once a month. The releases are complete, ready to hand to the publication, except for inserting the dealer's name and some pertinent information about his establishment and service facilities. A community open house, to be called "Conservation Day," is one suggestion written up. Other subjects cover the distributor's field and shop service facilities, parts rebuilding, service schools and the technical personnel available to the customer.

That, in brief, is Caterpillar's intensive "Cat Care for Longer Wear" program for preventive maintenance.

Suggested letter No. 5A

_____, 1951

Dear_____:

A new color motion picture on tractor preventive maintenance has just been released by Caterpillar Tractor Co. We, at John Doe Equipment Company, have seen a preview of this film and are very enthusiastic about the story it tells. We believe you and your organization will feel as we do about the film and we will be pleased to show it to you and your organization at your convenience.

At the showing of the film, we will distribute a new cartoon style, 4-color booklet on tractor preventive maintenance, copy of which is attached. We believe each of your operating and mechanical personnel will benefit from this booklet.

Name the time and the place for the movie showing, or talk it over with our sales representative on his next call.

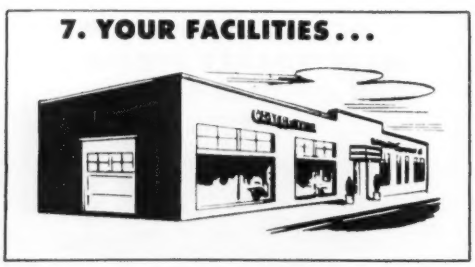
Yours for "Cat" Care,

Service Manager

"CAT" CARE
SCHEDULE NO.
17
FORM NO.
5A
ITEM:
SUGGESTED LETTER ON TRACTOR PREVENTIVE MAINTENANCE

PRINTED IN U.S.A. FORM NO. SUM

ADVANCE PLANNING DETAILS are shown by this sample letter prepared by company for distributors to announce availability of new tractor maintenance movie, identified in program by sticker.



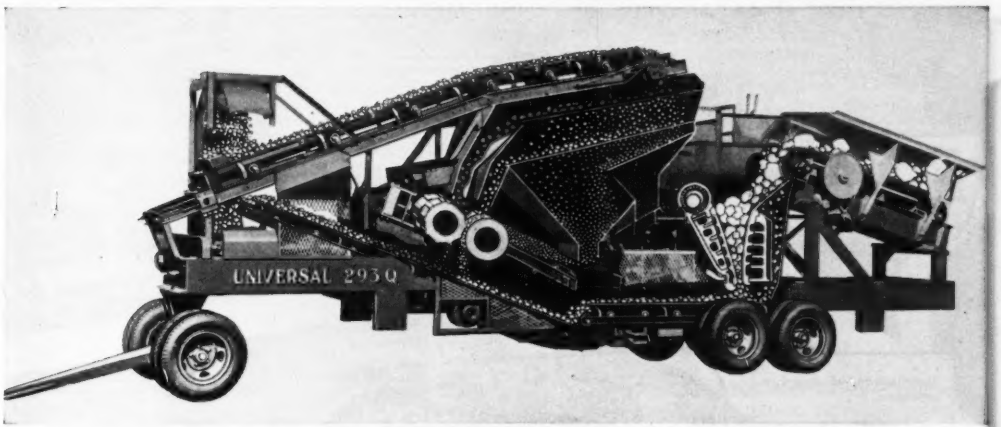
The UNIVERSAL 293Q TwinDual PACEMAKER

gives you these

EXCLUSIVE

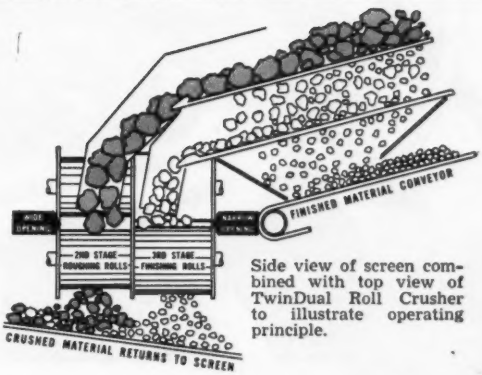
Profit-Making Advantages

- TwinDual Roll Crusher
- Three separate crushing operations
- Primary and Secondary on single truck
- Only one plant to move instead of two
- Only one power unit to service
- Flexibility for rock or gravel
- 20% greater screening efficiency
- Better quality finished aggregate
- Lower initial cost — lower maintenance cost
- Top production



PIT OR QUARRY — rock or gravel. Name your operation. The TwinDual Pacemaker sets new standards for profitable hour after hour tonnage at low cost per ton. Three crushing operations with Universal's exclusive TwinDual Method provide top capacity, divide the load between three crushing stages. Permit a more favorable ratio of reduction resulting in longer crusher life, less maintenance and better quality finished product.

There is much more to the profitable TwinDual Story. Facts are yours for the asking. Bulletins U520 and U501 will give you detailed information.



Side view of screen combined with top view of TwinDual Roll Crusher to illustrate operating principle.

UNIVERSAL ENGINEERING CORPORATION division of PETTIBONE MULLIKEN CORP.

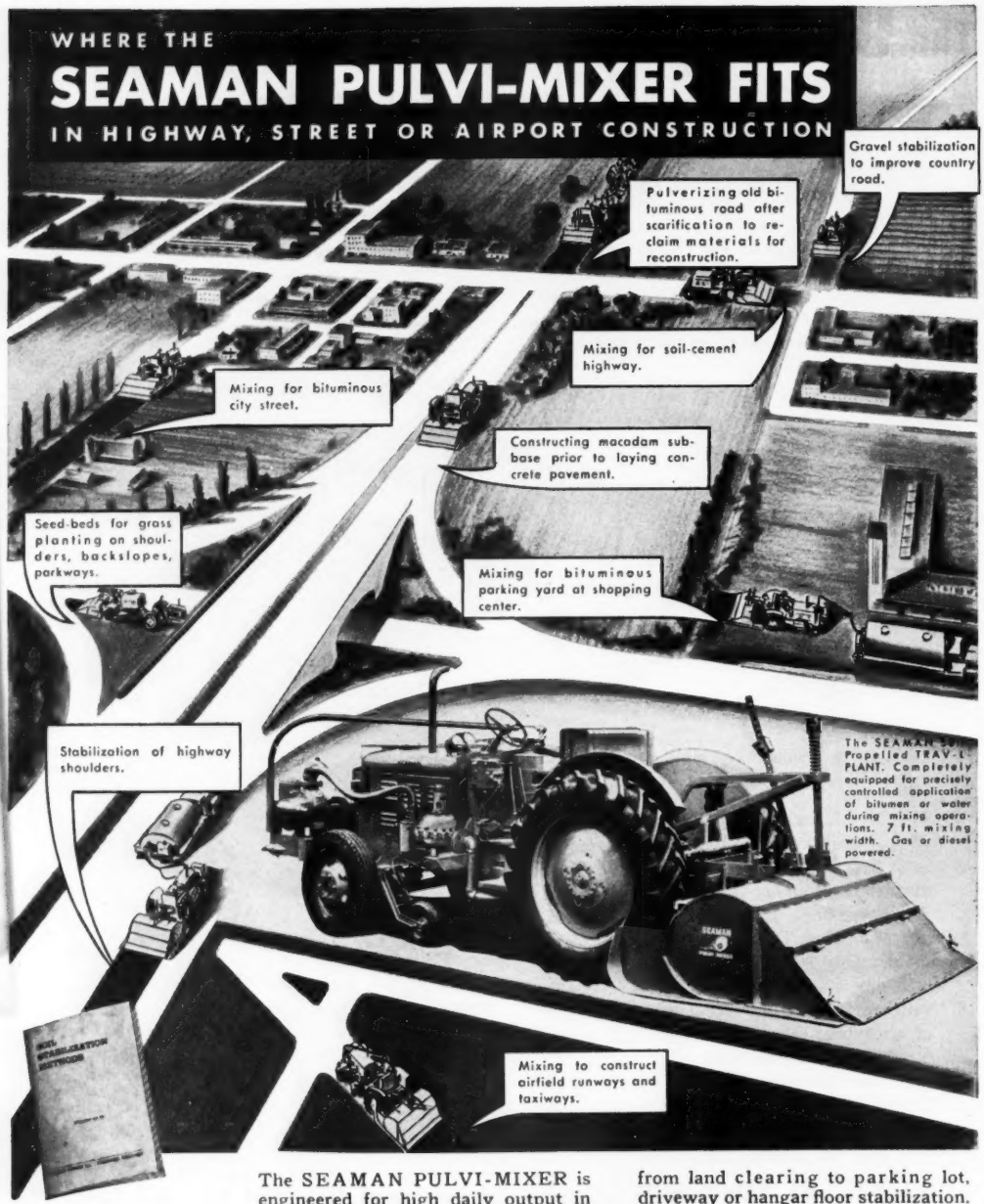
327 8th St. N.W., Cedar Rapids, Iowa
Phone 7105

4700 W. Division St., Chicago 51, Illinois
Phone SPaulding 2-9300

WHERE THE

SEAMAN PULVI-MIXER FITS

IN HIGHWAY, STREET OR AIRPORT CONSTRUCTION


Gravel stabilization to improve country road.
Pulverizing old bituminous road after scarification to reclaim materials for reconstruction.
Mixing for soil-cement highway.
Mixing for bituminous city street.
Constructing macadam subbase prior to laying concrete pavement.
Seed-beds for grass planting on shoulders, backslopes, parkways.
Mixing for bituminous parking yard at shopping center.
Stabilization of highway shoulders.
The SEAMAN Self-Propelled TRAV-L-PLANT. Completely equipped for precisely controlled application of bitumen or water during mixing operations. 7 ft. mixing width. Gas or diesel powered.
SOIL STABILIZATION METHODS
Mixing to construct airfield runways and taxiways.

This **FREE** book, SOIL STABILIZATION METHODS, modern in every respect, compiled by SEAMAN engineers, gives you complete information on processing methods and on the many uses for the SEAMAN. Ask for Bulletin 25.

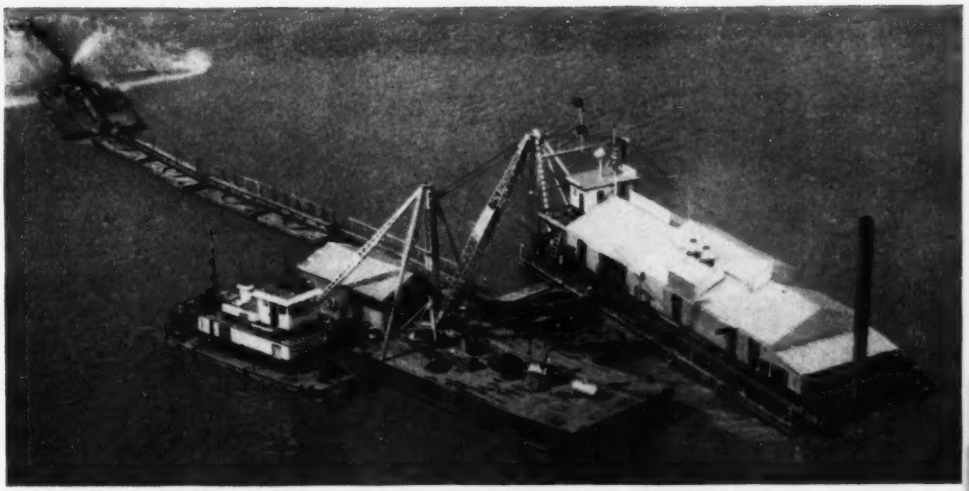
280 N. 25th ST.

The SEAMAN PULVI-MIXER is engineered for high daily output in all mixing operations on the most extensive stabilized construction projects — utilizing any type of binder with any suitable aggregate or soil. In addition, the SEAMAN is profitable in a variety of work that ranges from land clearing to parking lot, driveway or hangar floor stabilization. Low investment, small operating cost and high maneuverability are the reasons for such versatility.

Glance at the applications shown above. Then—put a SEAMAN in your road or street construction plans.

SEAMAN MOTORS, INC.

MILWAUKEE 3, WISCONSIN



Sandsucker brings up tons of Mississippi River silt as . . .

Underwater Pipeline Is Repaired and Re-Laid

By JOHN MONTFORT, Staff Assistant, Mid-Valley Pipeline Co.

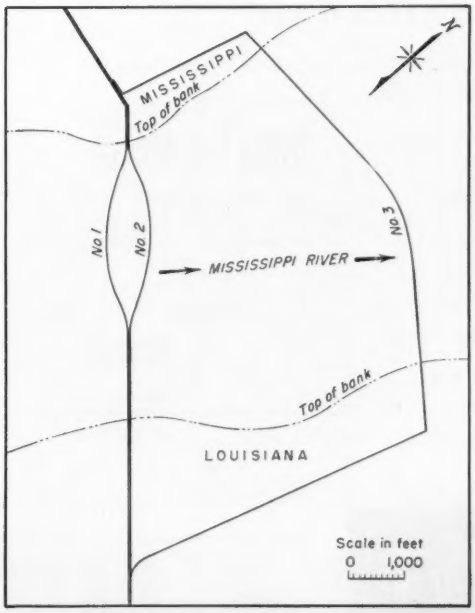


FIG. 1 . . . Sketch of dual crossing of crude oil pipeline across wide Mississippi. No. 1 Crossing had to be repaired; both 1 and 2 had to be laid deeper. No. 3 was temporary service line.

BACK IN midsummer 1949, Mid-Valley Pipeline Co. of Longview, Tex., laid two 20-in. pipelines across the Mississippi River near Mayersville, Miss., crossing from the northeast corner of Louisiana.

The two lines were buried deeply in the river bottom to forestall damage due to heavy currents. In spite of that precaution, high water early last year did some severe undercutting and caused a break in the No. 1 line of this crude oil trunkline stretching for 1,000 mi from Texas to Ohio.

Mid-Valley was faced with the difficult task of salvaging, as quickly and economically as possible, the deeply buried broken line and of lowering both crossings to a greater depth for future protection. A third crossing (see *Fig. 1*) had to be constructed before taking the unbroken No. 2 out of service.

Essentially, this reconstruction project consisted of seven principal steps: (1) Uncovering the lines in the east bank; (2) cutting the lines at the east overbends; (3) removing the section of broken line between the break and overbend; (4) attaching cables to the end of the section which was to remain; (5) lifting the end above water; (6) tying on and relaying to the overbend; and (7) lowering both lines by sand sucking.

Crossings No. 1 (the broken line, *Fig. 2*) and No. 2 exemplify lines originally laid in deep water well below the river bottom. Salvage operations disclosed that the break in the first crossing occurred at Station 18+60, about 400 ft from the east bank. The east approach of both crossings was quite deep.

When the crossings were laid originally, the approach cut had been backfilled to meet requirements

(Continued on page 126)

only Allis-Chalmers can offer you

1000 Hour

for truck wheels, idlers, support rollers

FULL PROTECTION — only One Greasing Every 1000 Hours — with Allis-Chalmers *Exclusive* Positive Seal, Roller Bearing Design!

Think of it! You can operate for 6 months on a 40-hour-week basis with just one lubrication of 14 to 20 of the most-abused, hardest-to-service points on a tractor. It's possible through an exclusive combination of glass-smooth Positive Seals and anti-friction bearings that help you do more work at lower cost even under toughest conditions! And it's another ahead-of-the-field design feature found only in the four new Allis-Chalmers tractors.

These Big Benefits Mean DOLLARS to you!

DAILY GREASING PERIODS ELIMINATED. You save at least 30 minutes every day . . . gain about one full month's production every year.

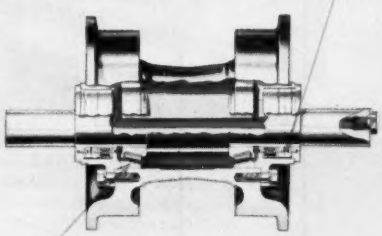
FULL PROTECTION ASSURED. Positive Seals keep grease in . . . dirt and moisture out. 1000-Hour Lubrication gives you protection unchallenged in the tractor field.

SAVES ON GREASE. Truck wheels, idlers and support rollers are grease-filled at the factory . . . need new grease only once every 1000 hours!

EASY TO SERVICE. No more cleaning of dirt, muck and grime from fittings every day. Operator can choose time and place to regrease when conditions are favorable.

Here's the secret:

Positive Seals each have two spring-loaded steel rings — one stationary, the other turning with the wheel. Ground smooth as glass, they seal the grease in . . . keep dirt, grit, dust, mud and water *out*.



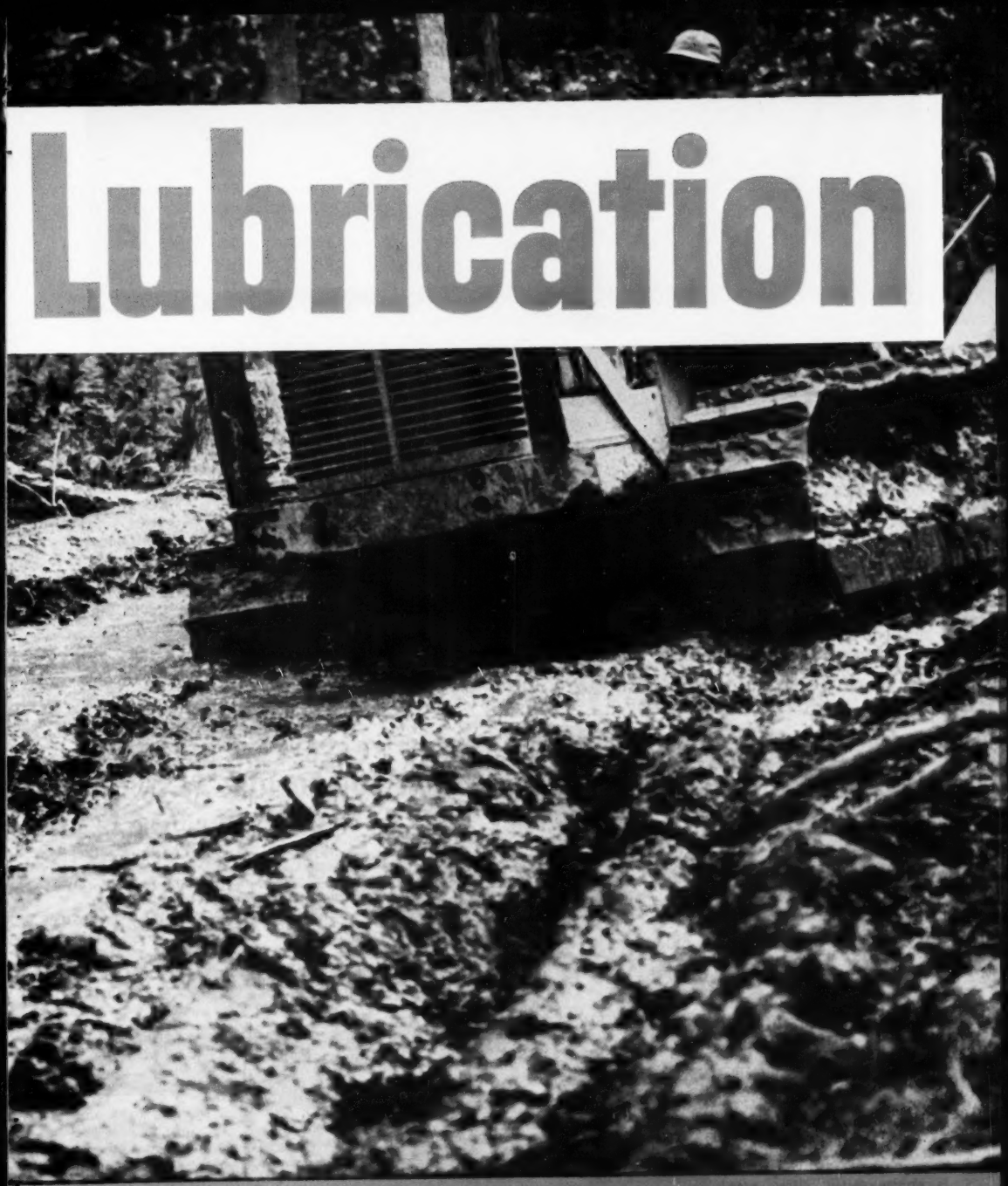
Tapered Roller Bearings protect the Positive Seals by letting truck wheels, idlers and support rollers rotate freely...without side thrust or wobble. Reduced friction lets the tractor move easier, produce more drawbar power.

the newest finest tractor line on Earth!

HD-20 HD-15 HD-9 HD-5

DESIGNED FOR YOUR JOBS • BUILT TO TAKE IT • EASY TO OPERATE • EASY TO SERVICE

Lubrication



ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

DERRICK PICKS UP end of damaged pipe from bottom of river, as three support barges line up in position to support pipe progressively as it leaves the bottom. Sandsucker in background uncovers pipe and deepens trench for "improved" laying.

of the U. S. Engineers. Accordingly, as Crossing No. 3 was being laid, scrapers and a large dragline removed as much of this east approach overburden as possible. This operation was performed with complete safety to the operating No. 2 Crossing because the pipe lay so far below scraping elevation.

As No. 3 line neared completion, a 20-in. cutter dredge was employed to finish up the job of uncovering Crossings 1 and 2 in the approach. The material being recent backfill, the dredge was used without her cutter; she served as a sandsucker.

The dredge was equipped with a heavy ladder, which had been lengthened specially for this job to permit cutting to depths 75 ft below water. This, combined with the large, heavy hull, made the dredge very insensitive. Because the pipe might be damaged if struck by the ladder, the dredge uncovered Crossings 1 and 2 to an

THURMAN PORTABLE TRUCK SCALE

THIS SCALE CAN BE MOVED FROM JOB TO JOB, AS A UNIT

Accurate and Portable

This scale can be transported, assembled from one job to another by removing six bolts which hold the side levers in place. The assembled scale can be loaded onto a truck and lifted as a unit. Once positioned in the new location, it can be ready for use in minutes.

- **Capacities 20, 25 & 30 Ton**
- **Platform Lengths 18, 22, 24 & 30 ft.**

Wide Steel Bases

at both ends support scale, therefore, require no concrete footing. Easy-to-read weigh-beam is chrome-plated. Other vital parts electro-plated against erosion.

Also, can be installed as a pitless scale, saving expensive concrete pit-construction costs.

The Thurman Line Includes:

• Pit Scales up to 50-Ton capacity • Pitless Scales • Batching Scales • Liquid Weighing Scales • Wheelbarrow Scales • Warehouse Scales • This and other weighing equipment in sizes to fit your requirements

THURMAN MACHINE CO.
(Scale Division)
Established 1918
152 North Fifth Street Columbus 15, Ohio

elevation approximately 6 ft above the pipe.

A 310-cfm air compressor was connected to the west end of No. 1 Crossing to pump air through the break for leak-location purposes. The escaping air not only accomplished this objective noticeably, but also, to everyone's surprise, the compressed air carried past the break and was delivered to the east end of the crossing, thereby indicating either that the pipe was only cracked or that the broken ends were well aligned.

After Line No. 1 was sawed at the east overbend, a 20-in. sandsucker set in at the eastern extremity of the approach to suck the remaining covering off the line. Light in weight and of medium size, but high in horsepower, this boat was equipped with a relatively fragile, 20-in. pipe ladder more than 100 ft long and could suck at depths 85 ft below the river surface.

Line Pickup

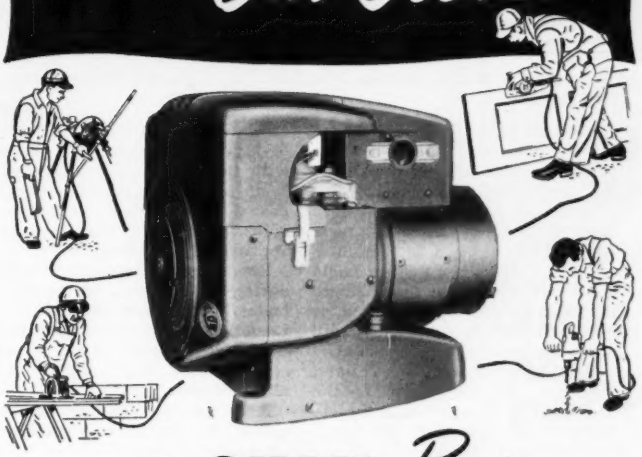
The lightness of the ladder and the size of the boat combined to make her sensitive for work where she was constantly striking a pipeline. It was easy to tell when the ladder had struck the line from the top, bottom, or side; and the light construction of the ladder precluded risk of damaging the pipe.

The sandsucker swept about 400 ft of the pipe west of the overbend. Then a derrick barge of 75-ton capacity was brought into the cut, and a specially constructed dual-roller cradle slipped over the pipe end and attached to the load line of the derrick. As the derrick lifted the pipe, the barge winched itself toward the river, causing the line to be picked up progressively from the bottom.

This procedure was followed for about 200 ft, after which a ramp barge was brought in and the end of the pipe placed up on the ramp. When it was found that the break section lacked sufficient mechanical strength to remain intact and serve to lift the necessary amount of line west of the break, the section of line from Station 10+50 to Station 18+60 was removed, leaving the broken end of the west section lying beneath the river bottom, with no lines attached.

At that point, the sandsucker came in and swept the line clean for approximately 400 ft west of the break. It then was moved back to a location about 25 ft from the broken end, the suction line placed against the pipe and pumping car-

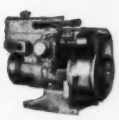
Save Manpower-
Cut Costs!



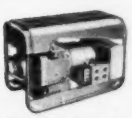
with ONAN *Portable*
ELECTRIC PLANTS

Use cost-cutting electrical tools on every job from start to finish, even where highline power is not available. Lightweight, heavy-duty Onan Electric Plants supply plug-in electricity *anywhere* for power saws, pipe-threaders, drills, planers, vibrators, repair-shop tools, other motor-driven equipment and lights. Lightweight, air-cooled models: 400 to 5,000 watts. Water-cooled plants to 35,000 watts.

A MODEL FOR EVERY CONSTRUCTION JOB



ONE-CYLINDER MODELS—Lightweight, heavy-duty air-cooled. 400 to 1,000 watts A.C. - 750 to 1,500 watts D.C.



TWO-CYLINDER MODELS—Horizontally-opposed air-cooled. 1,500 and 3,000 watts A.C.— 2,000 and 5,000 watts D.C.

WATER-COOLED MODELS— 5,000 to 35,000 watts, A.C. Powered by heavy-duty industrial gasoline engines.

Write for Folder

Onan PRODUCTS

D. W. ONAN & SONS INC.

6781 UNIVERSITY AVE. • MINNEAPOLIS 14, MINN.

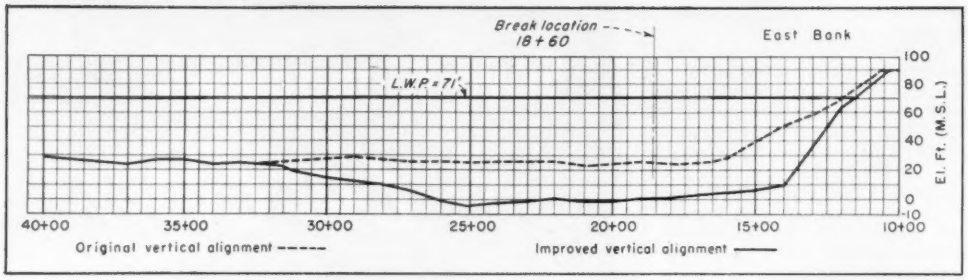


FIG. 2 . . . Graphic illustration of original vertical alignment and improved placement after broken line had been repaired.

ried on for about 30 min to create a hole under the pipe. Then the pump was shut off and the ladder left against the pipe.

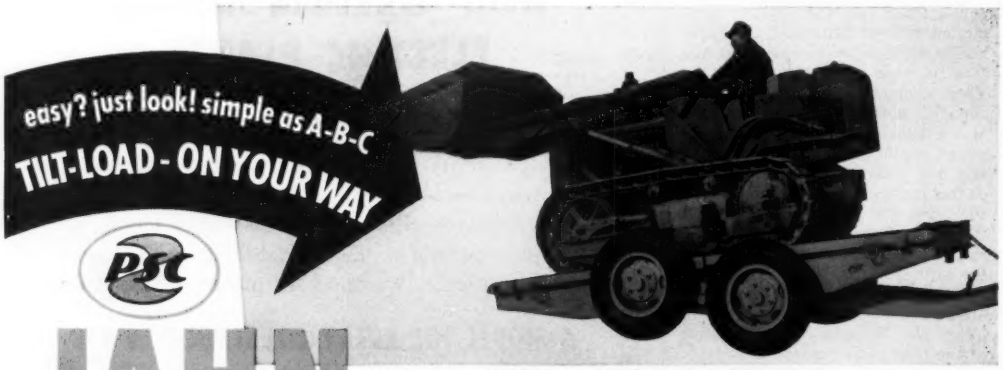
A diver, wearing only a face mask and swimming trunks, made the 70-ft dives in a few minutes as he took the end of a ⅜-in. cable down and around the pipe. Due to the exceptionally swift current, it was necessary for him to climb down by ladder.

Upon placing the cable around the pipe, the diver brought the end back to the surface, completing a ⅜-in. cable sling. Workmen aboard the sandsucker attached a ⅞-in. cable and pulled it around with the ⅜-in. cable to create a ⅞-in. sling. The operation was repeated at three other points to provide four ⅞-in. slings, spaced approximately 75 ft apart.

Elevation of the water surface during this operation was approximately 85 ft above mean sea level. Elevation of the pipe had been lowered inadvertently by uncovering operations to approximately 15 ft MSL.

After the four lift lines were attached, the derrick was hooked to the end sling and three supporting winch barges connected to the remaining three lines. Large scales were marked with crayon on the decks of the support barges. Observation of cable block movement across the scales indicated how much the pipe had lifted.

A boat equipped with a precision supersonic fathometer, was positioned west of the lift barges and moored so that the fathometer hovered directly over the pipe. Respective amounts of lift for each lift unit had been predetermined to retain proper vertical curvature.



JAHN TILT TRAILER

. . . a *one-man* operation from job to job. Just tilt the trailer bed, drive your equipment aboard and you're off to the next assignment. All this in a matter of minutes.

This rugged Jahn Tilt Trailer will safely and economically transport tractors, rollers, compressors, mixers and many other types of heavy construction equipment . . . a silent partner in your business of conserving man-hours and saving money.

For further information, fill in and mail attached coupon today.

THERE'S A JAHN TRAILER FOR EVERY HAULING NEED

Tandem Axle Trailers | Tandem Axle Tilt Trailers | Single Axle Trailers

PRESSED STEEL CAR COMPANY, INC.
Jahn Trailer Division
6 N. Michigan Ave. Chicago 2, Ill.
Dept. CM&E

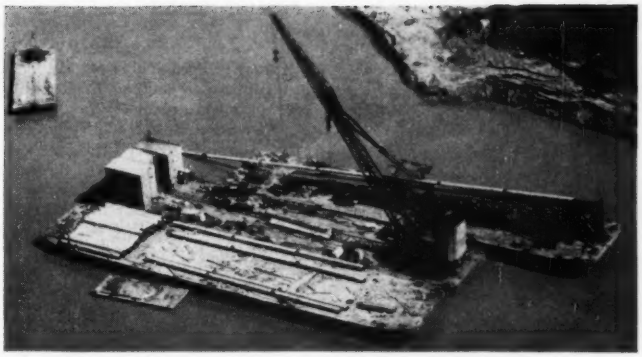
Dear Sir:
Send me literature on Jahn Trailers of the load limit checked, without obligation.

☐ 8 ton tilt ☐ 20 ton semi ☐ 25 ton semi ☐ 30 ton semi

Name_____

Address_____

City_____ State_____



RE-LAYING OF CROSSING NO. 1 progresses toward east bank after broken section has been cut out and new pipe joined. Ramp barge simplifies pipeline raising and lowering as barge derrick does the heavy work and supply barge supplies convenient replacement pipe.

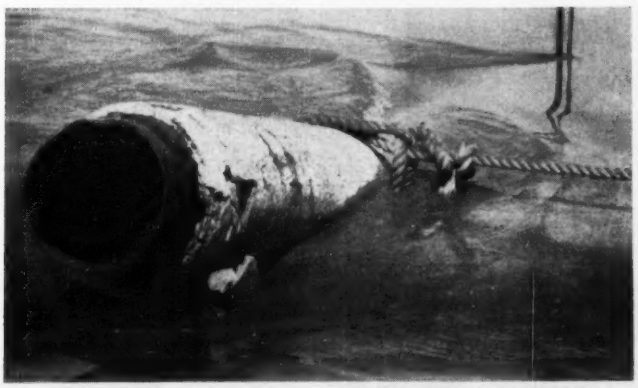
Meanwhile, as the hovering fathometer indicated, the pipe was lifting from the bottom with no signs of buckling. Raising was continued until the end of the line was lifted far enough above the water to place the end on the ramp barge so that the 40-ft joint containing the break could be removed. The pipe wall at the rupture exhibited a 45-deg shear plane, indicating a tensile break.

The pipelines having a negative buoyancy in fresh water of only 18% when empty, it was deemed desirable to displace the water from the west section of Line No. 1 before picking up the broken end above water—to minimize beam stresses between support points. For this purpose, three air compressors, totaling 700-cfm capacity, were installed at the west end of the crossing and operated for 24 hr before and during the pick-up.

A cyclic effect was noticed. For periods of 15 to 20 min no air bubbles appeared on the water; then a sudden eruption would occur, throwing water 10 to 12 ft into the air for several minutes. Lifting was synchronized with these eruption periods, as it was believed that the water was almost completely displaced at those times. The line handled in a manner indicating that it was reasonably empty.

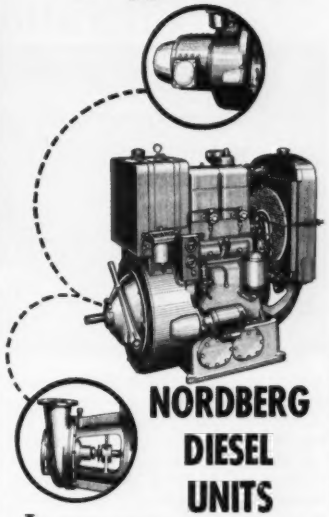
Two prefabricated sections, each 120 ft long, were welded on and laid from the ramp barge to bring the end of the line close to the river bank. The end was capped, a 4-in., 50-ft riser attached, and the line lowered to a point where the end was about 10 ft off the bottom so there would be a minimum length of line subject to vibrations from the current.

Four load lines which had been attached were buoyed off. A 1,000-



BROKEN END OF 20-IN. LINE breaks surface of water as derrick brings it up and rope holds it against strong current. Diver in face mask and swim trunks fastened lift sling.

Versatile—Low Cost Power for Hundreds of Applications



NORDBERG DIESEL UNITS

IN HUNDREDS of applications in many industries . . . for power units on shovels, for crane magnets, for pumps in mines, quarries, and irrigation, for petroleum production pumping, for auxiliary generating sets, ashore and afloat, for standby lighting units in manufacturing plants . . . that's where you'll find NORDBERG "4FS" Diesel Engines on the job, producing dependable power at low operating and maintenance costs.

Built in 1, 2, and 3-cylinder sizes from 10 to 45 hp, these heavy duty medium speed units are available as straight power units with stub shaft or clutch power take off—as packaged generator sets producing from 6 to 30 K.W.—and as "packaged" centrifugal pumping units.

Send the coupon today for more details.

NORDBERG

BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY DUTY DIESELS

Mail this coupon Today

Nordberg Mfg. Co.
Milwaukee, Wis. 4-352-1CQFMOP

Please send literature describing the full line of Nordberg "4FS" Diesel Power Units.

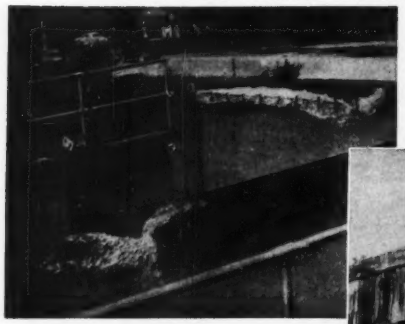
Your Name_____

Company_____

Address_____

City_____ Zone____ State_____

THOROSEAL *Restored* this Filtration Plant



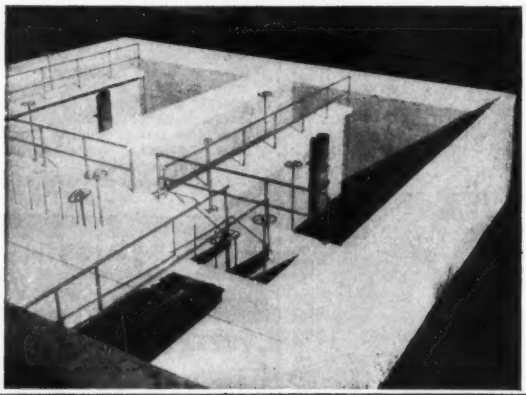
BEFORE

Example of complete break-down of masonry, due to penetration of water into body of concrete and action of frost in damp masonry.

It is amazing how THORO System products will correct a condition, such as shown in photograph. Concrete was sandblasted to remove all disintegrated material to sound concrete surface and reinforcing rods. Patching was done with THORITE Patching Mortar, bringing blistered areas to true and even lines, followed by two applications of WHITE THOROSEAL for protection.

AFTER

At minimum cost, almost ⅓ the cost of other methods, concrete restoration, patching and surface protection was completed with THORO System products on Filtration Plant in Keyser, West Virginia. Contractor: Standard Construction & Waterproofing Company, of Cumberland, Maryland.



WATERPLUG	THOROSEAL	QUICKSEAL
To Stop Leaks	To Seal Surface	For Beautiful Finish

Our 20-page Brochure describes, in detail, how The THORO System products can benefit you in your construction plan. Send for brochure today, which shows methods of application and how to use the material.

Standard Dry Wall Products

Box X, NEW EAGLE, PENNA.

psi hydrostatic test was applied through the 4-in. riser to check the unbroken part of the crossing for possible defects.

With its cutter attached, the cutter dredge then set in at the east bank approach cut, north of No. 2 Crossing and began excavating the cut to the improved finish grade. Proximity to Crossing No. 2 caused the soil beneath it to slough to the dredge suction. This made it necessary to support No. 2 Line at several points with cables off the side of a 250-ft barge.

Because of the extremely high banks, it was impossible for the dredge to make and hold the approach ditch to the finish grade. However, what sloughed in was loose material that could be handled later with a sandsucker.

Lines Lowered

As soon as the dredge had cut out the approach, Crossing No. 1 was picked up the second time, placed upon the ramp barge and laid out to the overbend. Here the sandsucker set in and, by sucking alongside the pipe, lowered it to the new (or improved) vertical alignment. When Line No. 1 was finished, the same lowering process was repeated for Line No. 2.

In assuming the improved vertical alignment, both lines simply were allowed to sag as they would. That is, there are no prefabricated bends; instead there is a gradual, uniform elastic bending of substantial lengths of pipe.

A sandsucker offers an effective way to lower a pipeline. It is necessary that the machine possess sufficient capacity to make and hold open a long enough ditch for the large-diameter pipe to sag down. The sandsucker used by Mid-Valley had a capacity of 15,000 to 20,000 cu yd of solids per day.

Increasing the negative buoyancy of the line when lowering also proved helpful. This was achieved by keeping it full of water. Mid-Valley engineers also found that while it was possible to lower the line as much as 30 ft at one drop, faster progress resulted from making two passes, each dropping the line 15 ft.

This experience indicates that the combination of a cutter dredge and a sandsucker may prove most economical for original construction of crossings which are to be buried deeply. Depending upon the size of the cutter dredge and river current conditions, it is necessary

when cutting a finish ditch ahead of laying the pipe to make a ditch 100 to 150 ft wide at the bottom, with side slopes of 1 on 3 or 4.

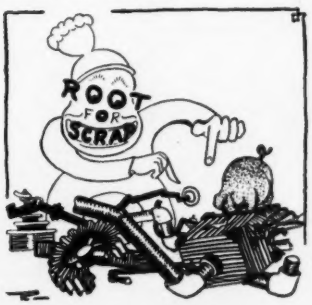
It is apparent that a substantial yardage is involved when the overburden is deep. Often, too, it is the last 5 or 10 ft of depth which make it virtually impossible to hold open a ditch.

Sandsucker Savings

Economies might be realized under such circumstances by rough cutting with a cutter dredge to remove the overburden to within 10 to 20 ft of the finish grade, after which the pipe would be laid in the rough ditch to be lowered subsequently to finish grade with a sandsucker. The envisioned economy here lies in the fact that the ditch made by a sandsucker is only a few feet wide at the bottom rather than 100 to 150 ft. A cutter dredge must swing in order to cut, and hence of necessity makes a wide bottom ditch. A sandsucker does not swing, merely sucks in place until no more material sloughs to its suction.

On the other hand, the technique of dredging a finish ditch ahead of laying offers a decided advantage in that the pipe can be placed into position accurately, both horizontally and vertically. Moreover, it eliminates the possible danger of damaging the line. A point to remember is that use of a sandsucker presupposes loose material. In clay, a cutter dredge would be required.

The successful results obtained on this salvage and repair project are attributed by Mid-Valley to the adroit utilization of dredging and marine equipment with sufficient capacity, by experienced men "at home" on the river. They were: J. Ray McDermott & Co., Harvey, La., prime contractor; McWilliams Dredging Co., New Orleans, dredging subcontractor; and Associated Pipe Line Contractors, Inc., Houston, Tex., who handled pipe fabrication and assembly.



LOST TIME INSURANCE FOR WIRE ROPE USERS

anybody can cut wire rope with tools and splice a wire rope in time, but you cannot lose time and finish on schedule with normal profit. When a wire rope must be cut fast and clean for threading or splicing, your insurance against lost time is the . . .

MORSE-STARRETT WIRE ROPE CUTTER

SIMPLE Anyone who can swing a hammer makes perfect cut.

EASY to put where you want it. No. 1 model weighs nine pounds.

FAST cutting assured by precision engineered blade and dies.

CLEAN cut, no frayed or jagged wire, perfect threading or splicing.

SAFE enclosed, locked-in cutting blade prevents accidents.

THREE SIZES, WITH CUTTING CAPACITIES UP TO [illegible]

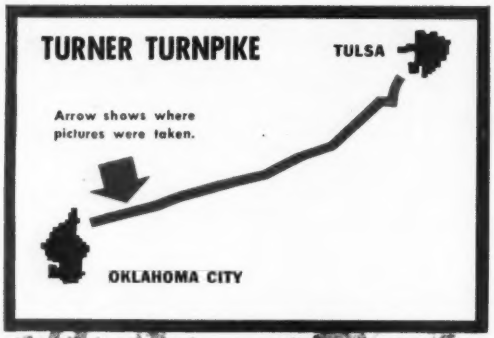
SEE YOUR DEALER OR WRITE DEPT. "B"

MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE, OAKLAND 1, CALIFORNIA

25 YEARS EXPERIENCE
for SATISFACTION
Foundation
WELLPOINT SYSTEMS
RENTAL • SALES
SEND FOR LITERATURE
Foundation Equipment CORPORATION
Long Island City 1, N. Y.
38th Ave. & 10th St.
EXeter 2-1100
Chicago, Illinois
2608 W. 111th St.
Hilltop 5-1545

Turning on the Power on the

Turner Turnpike



"Big Red"—the International TD-24 —carries the load for contractors on Oklahoma's new superhighway

12,500,000 cubic yards of earth are being moved to build the great new Turner Turnpike—a four-lane, limited access superhighway between Oklahoma City and Tulsa, 88 miles away.

Contractors on the job report that their International TD-24s are moving more dirt per day, because they have more power, more speed and more steer-ability than any other crawler on the market.

As Vernon Pool of Pool Construction Co. says, *"Nothing can beat these TD-24s. We have ten of them on our section of the Turner Turnpike. They out perform any other tractor I've ever seen. Our operators love them.*

"We've had all kinds of tractors, but the next ones I buy will be Internationals, too. One big reason besides their performance is that we always get prompt service from our International Distributor."

Get the low-down on TD-24 superiority from your International Industrial Distributor. Then consider the service he offers you—and you'll be a TD-24 man yourself from then on in!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

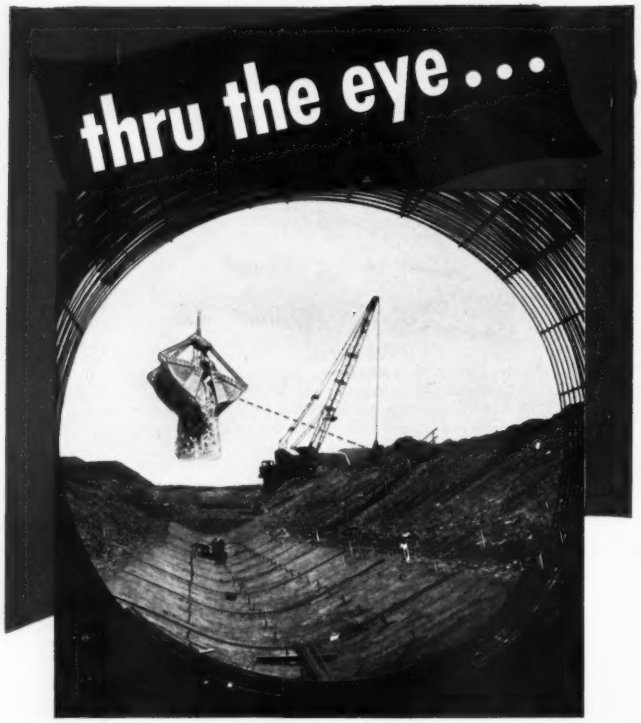
HAPPY CONTRACTOR is Vernon Pool (right) as he tells International Distributor D. V. MacDonald how good his TD-24s are. "One of them has 6,655 hours on the meter in three years," says Pool, "and it's working right along with the others."

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

TEN TD-24s GIVE PLENTY OF POWER FOR POOL. Pool Construction Co. is one of seven contractors with fleets of International crawlers on the Turner Turnpike. Pool has 14 Internationals on its section of the job, and 10 of them are TD-24s. Here you see three of these "Big Red Champs" push-loading self-propelled scrapers.

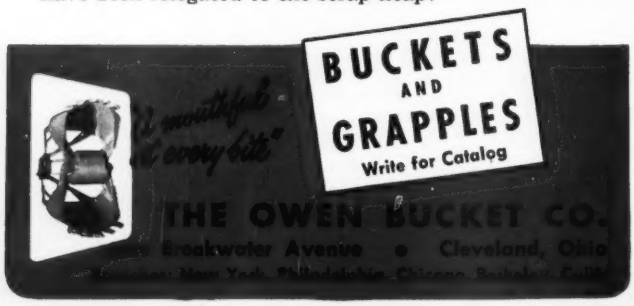


of a Culvert, a Contractor, or an Operator an OWEN BUCKET *"looks good"*

To a practical person looking out of a culvert such as this one, comes the suggestion of exceptionally great and economical digging ability or an Owen Bucket wouldn't have been selected.

To the contractor it recalls consistently good performance for years which has prompted him to reorder Owen Buckets year after year.

To the operator comes a reminder of how an Owen Bucket performs under varying difficult conditions, responding to his every demand and "stands up" with outstanding ability long after many buckets would have been relegated to the scrap heap.



Legal Decisions Concerning Construction

The Lawful Sale

THE CONTRACTOR had ordered certain supplies. Before the delivery date arrived a government regulation forbade dealing in these particular supplies, and the wholesaler demanded that the contractor take delivery.

"But the recent order makes the sale unlawful," the contractor demurred.

"Our sale was lawful when it was made, wasn't it?" queried the wholesaler.

"It certainly was."

"Then if a contract is lawful when it's made, it's lawful to carry it out, and if you don't take delivery I'll sue you for damages right off the bat," was the wholesaler's final announcement.

On this point the American law is well settled in all the States, and the rule is that if a contract is legal when made and then becomes illegal before it is carried out, the contract is thereby cancelled, so that neither the buyer nor the seller has any claim against the other party for not carrying it out. One case in line with this is Wilcox *vs* Edwards found in A. C. 13B 1392.

Suppose, however, that the wholesaler had contracted to sell supplies after the forbidding regulation was passed, but before the time for delivery arrived the regulation was rescinded, and then the wholesaler refuses to fill the order.

This case, it will be seen, is the reverse of the first, and the rule in Pennsylvania and Tennessee is that the rescinding of the law renders the contract legal so that each party may enforce it against the other.

In practically all the other States, however, the rule is that rescinding of the law does not render the contract legal. Once illegal, always illegal, so to speak.

The Tiny Courtyard

THE CASE OF Bebb *vs* Jordan, decided by the Washington Supreme Court and reported in 189 Pacific Reporter 553, is of particular moment to the building frater-

nity generally and will repay a careful perusal.

The evidence before the court shows that Jordan owned a lot in Seattle and that the contractor told him a building of a certain class could be erected on the lot for $300,000.

"Go ahead and draw the plans," Jordan told him. But before the plans were completed, Jordan decided to add two additional stories.

"That will increase the cost about $70,000 and will practically require new plans and specifications," the contractor told him. Jordan instructed him to proceed, the new plans were drawn, bids were called for and the lowest bid was about $40,000 above estimate.

Refuses to pay for plans

Jordan then abandoned the enterprise, refused to pay for the plans and the contractor sued in the Washington Courts.

"The building regulations of Seattle call for a court area of 1680 square feet for a building of this height. The plans provide for an area of less than 1300 so I could not erect a building from the plans, and they are of no value to me," was Jordan's defense. The court upheld him in these words:—

"It cannot be successfully denied, we think, that defects of this sort are defects of substance and not mere immaterial variances, and if the city has power to enact such ordinances, and the particular ordinance is not an arbitrary exercise of the power, Jordan could not lawfully erect a building in accordance with the plans submitted on the lot for which the building was designated."

"Then, if I am not entitled to payment for the plans in full at the agreed price, I am entitled to the reasonable value of my work, even if the plans cannot be used," the contractor contended, but the court also ruled against him on this point.

"Unquestionably, an architect when employed generally to draw plans and specifications for a building of given style and dimensions, may recover for the reasonable value of his services on a compliance with the terms of the employment, even though the building planned be one which the employer cannot erect at the place where it was his plan to erect it. But the rule is otherwise where the lot or the location of the lot on which the building is intended to

(Continued on page 139)

Heavy Rugged Powerful

PUBLIC UTILITY AUGER DRILL

Without disturbing the surface! A standard model McCarthy Public Utility Drill recently bored a 12" diameter hole to a horizontal depth of 180 feet, under railroad tracks, to lay a gas main at Alliance, Ohio. McCarthy Utility Drills bore holes from 4½" to 24" diameter under roads, buildings, railway tracks, landscaped grounds, etc., for laying gas, water, power lines and for drainage purposes.

SELF-PROPELLED HORIZONTAL AUGER DRILL

Produces 40% more 6 to 8-inch blast holes per day. Works up to 120-foot horizontal depths, using 6-foot interlocking auger extensions. Bill Mathews, of Canton, Ohio, drilled 1800' of 6" diameter holes in one day. Finger-tip hydraulic carriage control permits selection of any drilling speed up to 6 feet per minute. Four individual self-locking jacks maintain correct drilling level. Over-all length: 12 feet; width: 5 feet 8 inches.

VERTICAL AUGER DRILL

A real time-saver for 6 and 8-inch blast hole and exploratory drilling. Compactly designed for mobile mounting with 8-foot hydraulically controlled tower. Special square alloy shaft and chain coupling power combination results in smooth, positive drilling action. When in traveling position, the over-all height is only 7⅓ feet. Total weight: 4800 lbs.

THE SALEM TOOL COMPANY

765 So. Ellsworth Ave. •, Salem, Ohio, U. S. A.

SALEM

"172 to 181 tons per hour average

That's why I like Cedarapids"
says, C. C. LINCK
Beaver Dam, Wisconsin

CLARENCE C. LINCK
ROAD CONTRACTOR

Agricultural Lime | Washed Sand and Gravel | Road Gravel

Phone 5066

BEAVER DAM, WISCONSIN

Job Address
Beaver Dam, Wis.

February 9, 1952

Mr. Kenneth Lindsay
Vice President - Sales Manager
Iowa Manufacturing Company
Cedar Rapids, Iowa

Dear Ken:

I know you are always interested in the production of your equipment, so I want to tell you what I'm getting from one of our Junior Tandems.

On Highway 30 in Waukesha County, Wisconsin, I produced 93,095 tons of minus 1" material in 541 hours for an average of 172 tons per hour. On Highway 57 in Calumet County, I produced 61,992 tons of minus 1" in 341 hours for an average of 181.8 tons per hour. All finished materials were produced without any primary breaker, and we were operating in gravel pits that contained 50% stone.

These quantities were originally figured in cubic yards, but I've transposed the figures to tons, using 3000 lbs. per cubic yard as a base figure. This may seem too high as weight per yard, but it actually ran more than that. The quantities listed above are recorded with the State Highway Department.

I guess it's obvious why I like Cedarapids equipment! The main reason is the Horizontal Vibrating Screen on my Junior Tandems which are consistently producing from 20 to 25% more yards per hour than other plants I've used. These screens give me absolute accuracy to meet the strictest specifications. Other definite advantages of the Cedarapids plants are the V-Belt drives, and the fact that bearings from various parts of the plant are interchangeable throughout the plant.

Yours truly,

C. C. Linck

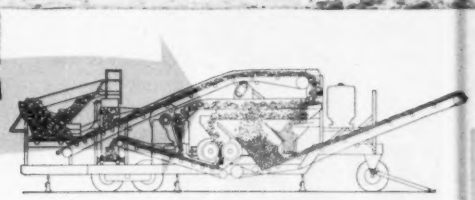
C. C. Linck

CCL:hen

THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

in gravel pits containing 50% stone

"IT'S THE HORIZONTAL SCREEN THAT DOES THE TRICK"



OF course, the entire Junior Tandem plant is built for high capacity, but it's the Cedarapids Horizontal Screen, and the way it's used, that accounts for C. C. Linck consistently getting 20 to 25% more yards per hour from his Junior Tandems than from other plants he's used. ONLY CEDARAPIDS PORTABLE PLANTS HAVE HORIZONTAL SCREENS!

The vibrating motion of the screen tosses the material upward and forward. As it falls, it strikes the screen cloth at right angles. A greater percentage of the material passes through each opening, because *the entire opening is utilized.* All the material that *should* pass through the screen *goes through* giving 25 to 30% more efficiency per square foot than other types.

The top deck feeding principle used on Cedarapids plants increases capacity, too, by eliminating any possible choke point and balancing the oversize pit run material between the jaw crusher and the roll crusher. By making an immediate split of the material between the proper crushers, the circulating load on crushers, belts and screens is reduced, and the output of the plant isn't limited by screen capacity or the capacity of the jaw crushers.

C. C. Linck owns two Cedarapids Junior Tandems, a Cedarapids 2236 Portable Primary and a Cedarapids Bin and Screening Unit. To put *your* operations on a big production basis like C. C. Linck, ask your Cedarapids distributor to explain all the features that keep Linck sold on Cedarapids equipment.

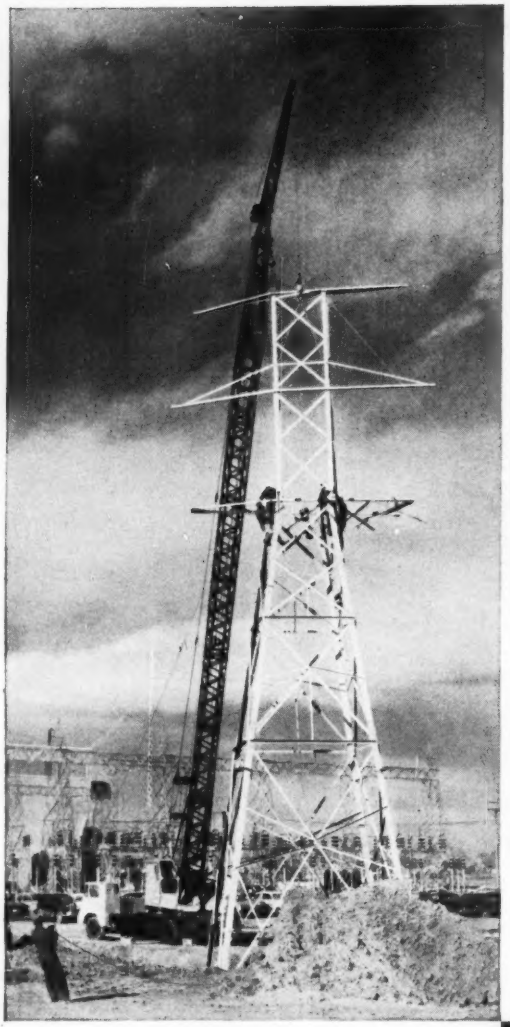
Cedarapids

Built by IOWA

headquarters for

COST REDUCING EQUIPMENT

IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa, U.S.A.



All lifts are easier with a CRANEMOBILE

top section of a 90 foot tower goes up quickly

Maybe you won't be placing steel 90 feet up . . . or handling 25 ton loads . . . but somewhere between these extremes you will find that all lifts are easier with a CraneMobile. With it you have flexible performance to handle long booms for high reach or short booms for heavy lifts.

The CraneMobile is made in several sizes having crane ratings from 10 to 25 tons . . . will speed to scattered jobs . . . and is packed with refinements and operating advantages. Consider the independent worm boom hoist which raises or lowers boom by power only. Then there is the power load-lowering device for precision handling of heavy loads. And, in checking the many BAY CITY features don't overlook the hi-collapsible gantry which reduces overall height to 11′ 9″ or less when traveling. That's only part of the story. Why not get complete information from your nearest BAY CITY dealer or write today for the CraneMobile catalog.

BAY CITY SHOVELS, INC.
BAY CITY, MICHIGAN

203

CHECK THESE FEATURES

- √ Pin-Connected Boom
- √ Hi-Collapsible Gantry
- √ High Road Speeds
- √ Independent Power Boom Hoist
- √ Precision Power Load Lowering
- √ Removable Counterweight
- √ Specially Designed Carrier
- √ 20-25 Ton Capacity

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

LEGAL DECISIONS . . .

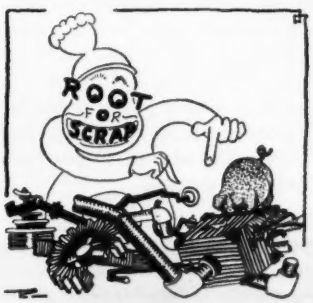
Continued from page 135

be erected is made known to him. In such a case he is bound to know the building restrictions at the particular place, and draw the plans and specifications accordingly, else forfeit his right of recovery for his services. This on the familiar principle that in all such contracts of employment there is an implied condition that the work, when completed, shall be suitable and proper for the purposes intended. An architect is an expert in his particular line of work. He so holds himself out and is employed because he is such. He is not only bound to know the character of materials necessary to the construction of a safe and durable building of the design required, but is bound also to know the building restrictions imposed by the law of the place where he is informed the building is to be erected."

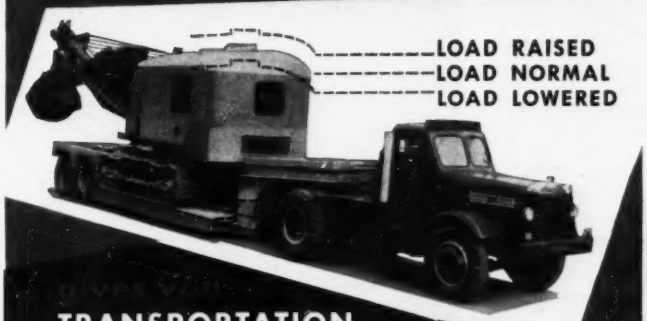
Then the contractor played his last card.

"When the owner stopped me from working on the original plans and ordered the plans for the larger building, the original plans had not gone far enough to show that the building would violate the city ordinance, and I am entitled to the reasonable value of the actual work done on the first plans," the contractor argued —and he won on this point.

"But we think the true answer is that the plans were incomplete when Jordan stopped work upon them, and that he cannot now be heard to say that when completed they would have violated the contract as to cost, or the city ordinances or would have been otherwise defective. These are matters that cannot now be certainly known, and the reason they are now in this uncertain condition is because of Jordan's acts," the Court ruled.

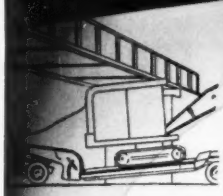


Only ROGERS TYPE "TPG" Power Lift
DETACHABLE GOOSENECK



TRANSPORTATION

LOAD MANIPULATION



Stoops to clear low overhead obstructions.

Raises its deck to clear high humped crossings.

The unique deck raising and lowering feature of this Rogers trailer makes load manipulation a distinct advantage under many hauling conditions.

Low bridge or high road bed obstacles are easily overcome. Deck is raised or lowered to alter overall height of load for overhead clearance. Raising deck clears high road beds.

Write for literature and full particulars or call your nearest agent.

THE ROGERS Power Lift DETACHABLE GOOSENECK CAN BE OBTAINED ON ANY STANDARD ROGERS DROP DECK TRAILER

EXPERIENCE builds 'em — PERFORMANCE sells 'em

ALBION, PENNA.
220 Orchard Street

Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizeable savings for contractors.

HEWITT-ROBINS

ALL SET FOR THE NEXT BIG JOB

After 2½ years' service carrying 4,600,000 tons of rock, these Hewitt-Robins idlers are as good as new

Here you see some of the Hewitt-Robins idlers that supported the 7-mile belt conveyor used in the construction of Bull Shoals Dam. Now, after 2½ years of continuous service, the dam is finished . . . *but the idlers aren't!*

Six thousand of these idlers have already been dismantled and inspected. Of this total, all but four passed the test. After cleaning and repainting, they were sold as worthy of being considered "equal to new."

These idlers demonstrate some of the many important advantages of the Hewitt-Robins Belt Conveyor method of moving materials. Machinery can be used on a succession of operations—the whole conveyor can be broken-down, packed in a boxcar and shipped for re-use elsewhere. Compare this with the expense of fleet truck operation and maintenance, road building and repair. The facts will prove that a Hewitt-Robins Belt Conveyor provides long-lasting, low-cost installation, operation and maintenance for moving bulk materials in quantity.

Hewitt-Robins not only originated the rubber-covered belt conveyor, it is the only company that manufactures both the specialized machinery *and the belt*. Thus, only Hewitt-Robins is able to take complete, unified responsibility for design, erection and successful operation.

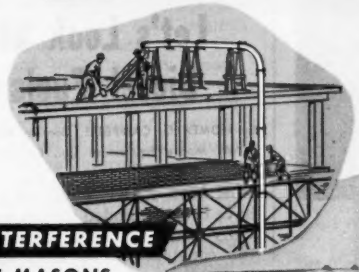
Learn now how conveyorizing may be the more efficient—more dependable—more economical answer to your bulk materials moving operations. Let us show you facts and figures. Send us the details of any project you have now or intend to bid on. Include topographical maps. Write Contractors' Service Department, Robins Conveyors Division.

HEWITT-ROBINS HR **INCORPORATED**
STAMFORD, CONNECTICUT

Hewitt Rubber Division • Robins Conveyors Division • Robins Engineers Division • Hewitt Restfoam® Division

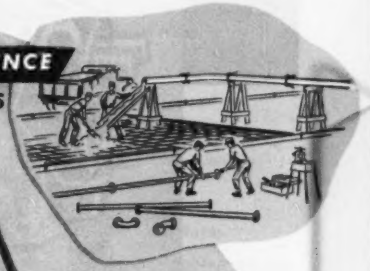
Are you Being Penalized for INTERFERENCE?

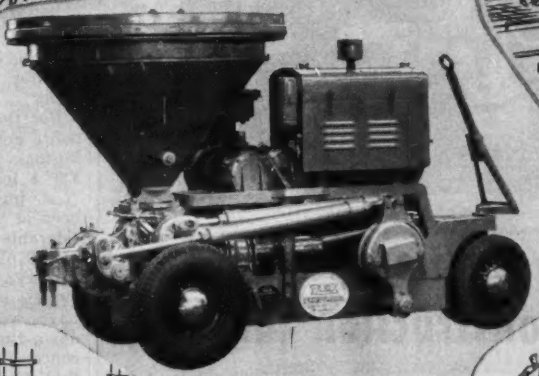
You're not if you're using Rex® Pumpcrete® . . . concrete by pipe line . . . because with Pumpcrete *there is no interference.* Other crews can continue working *without interruption* while concrete is poured right beside them.



NO INTERFERENCE WITH MASONS

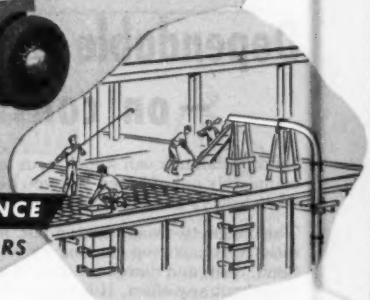
NO INTERFERENCE WITH PLUMBERS





NO INTERFERENCE WITH CARPENTERS

NO INTERFERENCE WITH ROD BUSTERS

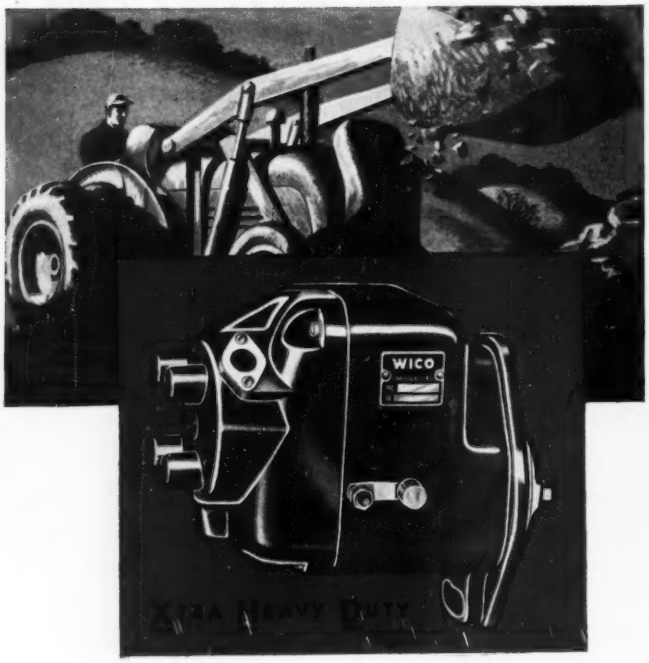


So don't be penalized by the high cost of interference *on any job* . . . interference that means dollars out of your pocket. Investigate the savings of concrete by pipe line today. Get the details from your local Rex distributor, or write to Chain Belt Company, 4664 W. Greenfield Avenue, Milwaukee 1, Wisconsin.

- **No delays waiting for various trades to finish up.**
- **No buggies, buggy runs or heavy equipment to move.**
- **No runway storage problem.**
- **Move placing equipment from floor to floor in 15 minutes! Just extend the pipe.**
- **Eliminate trestling, scaffolding, towers and other expensive preparatory costs.**
- **No cleanup problems.**
- **Place all the concrete where you want it, when you want it, in a smooth, steady flow.**

CHAIN BELT REX COMPANY®

CONSTRUCTION MACHINERY . . .



Dependable ignition pays off —on construction jobs

Ignition failures can knock your engines cold and throw working schedules completely out of kilter. But you don't have to worry about ignition troubles when you've got a WICO XHD *heavy duty* magneto on the job.

This magneto always feeds a hot, lively spark, even under the toughest conditions. It can keep running for weeks . . . even months . . . without let-up. Sand, dust, and dampness can't stop it. Shock and vibration bounce right off it without any effect. It is this performance that has made Wico the choice of leading manufacturers as original equipment on their engines.

The WICO XHD is extra rugged in every way. Its heavy duty coil is molded in solid plastic that takes long exposure to wet weather without arcing through. Large diameter tungsten breaker contacts are long-wearing, easy to adjust. All bearings are factory lubricated . . . never need attention. The rotor is a sturdy one-piece unit with Alnico-6 magnets cast directly to the shaft. Weatherproof finish covers all exposed metal parts. Available for four or six cylinder engines, with either flange or base mounting.

See your equipment dealer for full details on the complete WICO line, or write us for a list of WICO Authorized Service Stations nearest to you.

WICO Electric Co., West Springfield, Massachusetts

The Maintenance Shop

A MONTHLY EQUIPMENT AND REPAIR FEATURE

Let's Look at Diesel Fuels

By HOMER C. CAMPBELL, Service Manager, H. W. Moore Equipment Co., Denver, Colo.

FOR THE LAST YEAR or so we have been reminded almost continually of the confusion stirred up in the construction industry due to some form of controls. Affected mostly is the management side of both the contractor and the manufacturer of construction equipment.

But those of us in the maintenance end of this very interesting business also have our confusions. For a long time now, we of the "nut busting" department have been at the receiving end of considerable pressure to keep the power plants of construction machinery in top running order and to get the most out of the power we have with the least amount of down-time. Confusion has set in concerning the proper ingredients that go into keeping power plants up to par.

The modern diesel engine is the backbone of our industry, and two items vital to our success are fuel and oil. Diesel fuels and lubricants are of such great importance that more information on this subject should be put into the hands of those who buy and use them. We lay no claim to being an expert on fuels and lubricants. In fact, we have no engineering degrees, hence no fraternity brothers, and we have to borrow our money from skinners, truckdrivers and nut busters (they have the take-home pay nowadays).

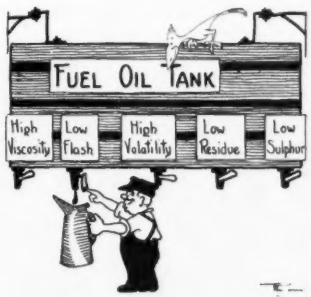
However, observation by sight and sound has told us a lot about this matter. The engines themselves have told us their troubles. A maintenance man discussing fuels and oils is laying himself wide open to a barrage of comment from those supposedly in the know on the subject. But we generally can point to a batch of parts from a complaining engine and merely say, "There you are, you carry the

ball from here out." Then as a rule we begin to get reasonable answers and action.

For the record, few engine failures that we have seen have been caused by lubrication in general, but rather by lack of lubrication and by contaminated lubricants. Over a period of many years of listening to the stories of engines themselves, we have heard but few complaints from these engines about fuels and lubricants that were used in a manner recommended by the manufacturer.

Major producers of diesel fuels are doing a good job of providing fuels to meet the specifications of engine manufacturers. However, many of the smaller producers and marketers are not hewing to the line as closely as they should. The big problem today with diesel fuels is the matter of sulphur, and in many cases this is serious.

The author's particular gripe with fuel specifications is concerned with the technicalities involved. We nut busters, owners and operators are not chemical engineers. We want to know that the fuel we get will give us a maximum of power with trouble-free service. We want to know whether

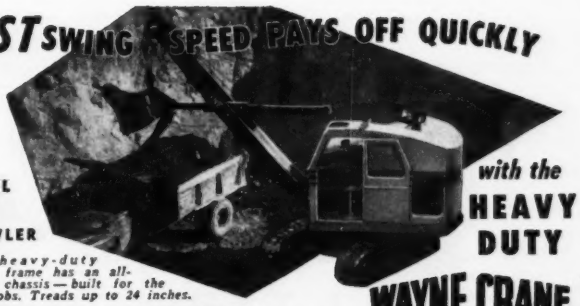


it will start easily, burn cleanly, give smooth operation, whether it is free of contaminants that cause wear, corrosion and various engine deposits. We can read and study to our hearts' content about ignition quality, volatility, viscosity, carbon residue, ash content, sulphur content, corrosiveness, water and sediment, acidity and alkalinity (and we haven't had that since prohibition), pour point, flash point, gravity, heat content, and on and on—but we are not satisfied.

What we want is to be able to call our fuel distributor and ask for a fuel by simple specifications and get an answer that is reliable. In many cases, you can order any

(Continued on page 146)

FAST SWING SPEED PAYS OFF QUICKLY



MODEL 66 CRAWLER

This heavy-duty crawler frame has an all-welded chassis—built for the tough jobs. Treads up to 24 inches.

with the HEAVY DUTY WAYNE CRANE

...INCREASES OUTPUT—SAVES TIME ON EVERY JOB

"ONE WAYNE CRANE SELLS ANOTHER"

One owner says, "Here is a ½-yd. shovel that moves more dirt than larger machines working on the same job." Others report the same because actually Wayne Crane has the fastest swing speed on the market—6½ r.p.m.

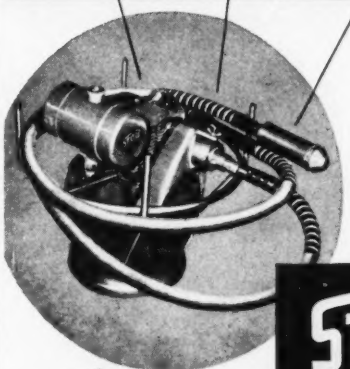
The Model 66 is a HEAVYWEIGHT in the ½-yd. class—31,978 lbs. as a shovel proves it—the extra weight is at points of greatest stress—this means more built-in hours of profitable operation.

You be the judge—don't buy a new crawler until you have compared Wayne Crane with any or all other ½-yd. machines. See for yourself that Wayne Crane offers more machinery for your money! Dept. M

MFD. by WAYNE CRANE DIVISION—AMERICAN STEEL DREDGE COMPANY INC.—Fort Wayne 1, Indiana, U. S. A.

Complete service and parts facilities are maintained by Wayne Crane Distributors in all principal cities.

proven efficiency!
proven dependability!
proven on-the-job economy!



Thousands of STOW vibrators the country over are proving their value every day . . . proving their efficiency by making possible quick, perfect placement of stiff mixes . . . proving their dependability by working hour after hour, day after day under the most rugged conditions without time-losing breakdowns, without expensive maintenance.

Write today or see your local distributor for a copy of STOW BULLETIN 511 and complete details on STOW concrete vibrators and screeds.

STOW GASOLINE AND ELECTRIC VIBRATORS

STOW MANUFACTURING CO.
31 Shear St., Binghamton, N. Y.

YOUR CHOICE OF 3 GREAT B-TYPE SCRAPERS

(22 yd. struck, 27½ yd. heaped). Largest scraper in current production available for use with crawler tractors. Developed along with the International TD-24 tractor to fully apply its unusual working capacity.

(16 yd. struck, 21 yd. heaped). Has greatest struck capacity of the scrapers loaded without pusher assistance. Designed as the companion to the TD-24 tractor — takes full advantage of its superior speed and power.

(10 yd. struck, 14 yd. heaped). Engineered especially to work with the International TD-18A Tractor and make a matched dirt-moving team of championship caliber.

Each of these three Bucyrus-Erie B-Type Scraper models loads with the same "fountain" action that breaks up chunks and boils material up through to fill the bowl completely.

Each hauls easily on big tires, and has the stability that comes with low bowl height, wide spaced rear wheels and proper weight distribution.

Each dumps fast and clean with the same positive *rolling* action — a type of ejection that requires less horsepower and thus permits dumping in higher tractor gear.

Each has the design refinements and strong construction throughout that mean extra ease of handling and servicing, extra yardage hauled, extra long life.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

BIG RED TEAM

CONTINUES TO WIN ON PERFORMANCE

Time after time the Big Red Team — International TD-24 Tractor and Bucyrus-Erie B-250 or B-170A Scraper — comes out on top in actual field tests. It hauls more yards, loads and dumps faster, has shorter overall cycle time than comparable units. But why not find out for yourself? Ask your International Industrial Tractor Distributor for a demonstration.

8T52C

15 opportunities to cut costs with LaCROSSE

If you operate any of the 15 types of equipment listed at right, you'll be time and money ahead with a dependable La Crosse trailer. Saves up to 4 hrs. waiting time for a rental unit on every move . . . permits better scheduling of work . . . keeps major equipment and crews busy for higher earnings. There's a job-proved La Crosse trailer for every hauling need—6 to 67 tons capacity . . . single, dual or tandem axle . . . flat, drop or tilting platform. Write today for free literature, prices and delivery information.

LC-23

- ☐ Asphalt Finishers
- ☐ Bulldozers
- ☐ Cranes
- ☐ Excavators
- ☐ Generators
- ☐ Graders
- ☐ Hoist Equipment
- ☐ Pavers
- ☐ Rippers
- ☐ Rollers
- ☐ Snow Plows
- ☐ Stationary Machy.
- ☐ Transformers
- ☐ Trenchers
- ☐ Tool Houses

Check Today!

LA CROSSE TRAILER CORPORATION, La Crosse, Wis.

☐ Rush complete information on La Crosse trailers:
☐ Specifications ☐ Prices ☐ Delivery
☐ Send name of nearest La Crosse Distributor.
☐ We may buy a ..... ton trailer about ..... (date)

Name..... Title.....
Employed by.....
Address.....
City..... State.....

LaCROSSE
America's Favorite LOW BED TRAILER

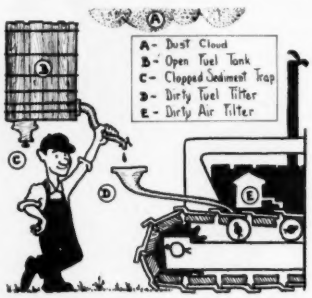
MAINTENANCE SHOP . . .

Continued from page 143

type diesel fuel you want and they will deliver it at once; order several different specifications of fuel and you will get them quickly, too, all out of the same source of supply—the one and only storage tank in your supplier's yard.

The latest information we have is that the American Society for Testing Materials has set up a tentative Diesel Fuel Specification D-975-50T. They have set up two grades of fuel, No. 1-D and No. 2-D, that apparently tell us that No. 1 is lighter than No. 2. We should like to be able to buy diesel fuels in full confidence, as we buy gasoline. It has been ages, it seems, since we have had gasoline trouble.

Now don't get us wrong, all diesel fuels are not wrong. We just want to know for sure which are right, and this writer feels he is speaking for a multitude of users in this matter. We are well aware of the fact that many diesel fuels are blamed for their misuse by operators. Improper storage and

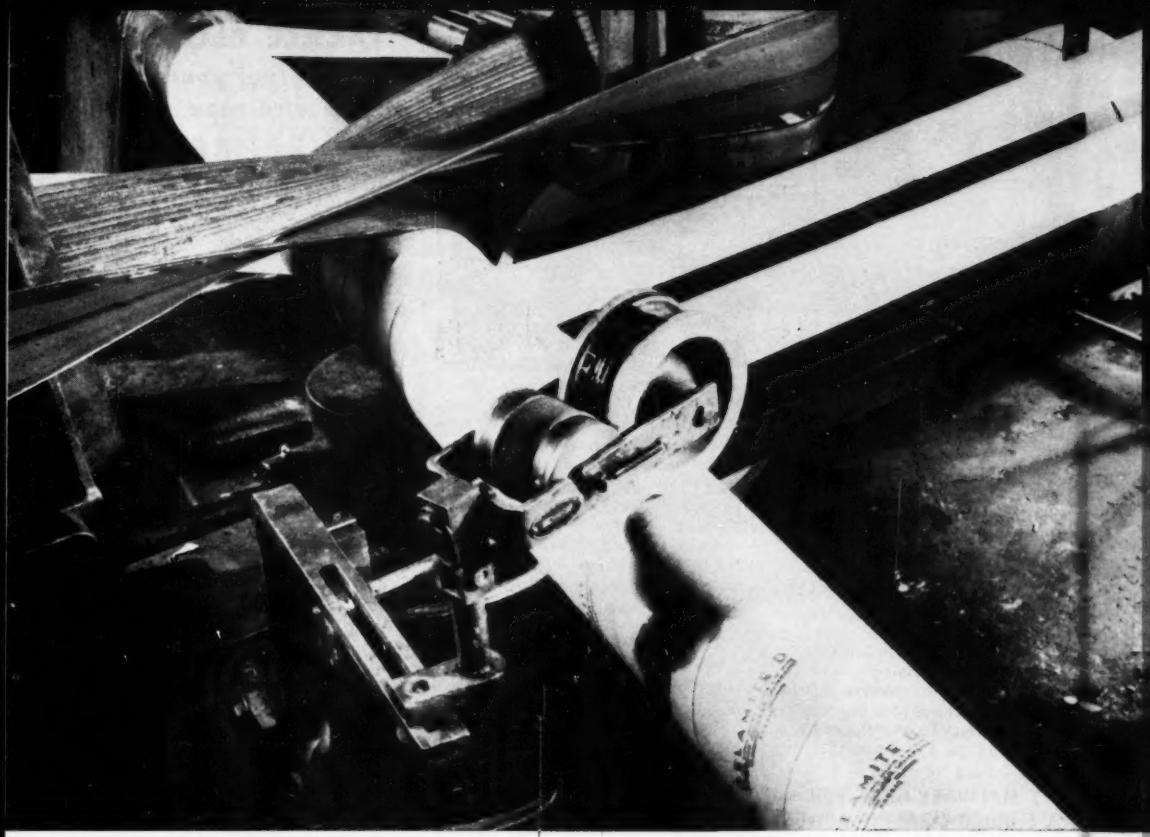


improper handling from the vendor to the engine cause untold trouble. Contamination by dirt and water are the most serious. Fuel filters not functioning from lack of attention, dirty air cleaners, sediment traps not being serviced properly and other careless practices by the human element involved cause unnecessary trouble.

Producers of diesel fuels have done an outstanding job in producing lubricants for use in construction machinery. They have produced our lubricating oils to meet the Mil-0-2104 specifications and, from all available information, we are getting just that. We would like to see a similar setup for fuels.

• Something is being done about diesel fuels to make the maintenance man's lot a happier one. CM&E readers can expect some useful information along these lines in an early issue.—ED.

PROGRESS IN EXPLOSIVES . . .



DYNAMITE, KING-SIZE

Did you know that dynamite comes in cartridges this big? Hercules pioneered in developing these larger cartridges which make for efficient blasting in large-scale coal stripping, open-pit mining, and quarrying operations.

These king-size cartridges range in diameter from 1¼ in. to 11 in. and weigh as much as 60 lbs. when filled. Spiral-wrapped in Hercules' own plants, they offer advantages in rigidity and smoothness. Other advantages: They are essentially their own shipping containers, are easier to handle and use, and can be stacked like cordwood.

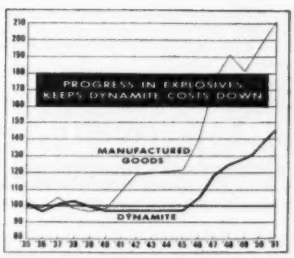


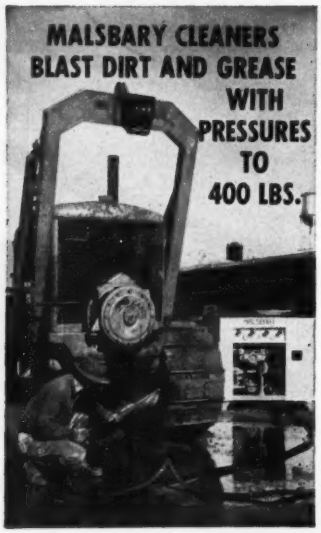
Chart shows relative stability of dynamite prices since 1935, as compared with prices of other manufactured goods. 1935-39 values=100.

HERCULES POWDER COMPANY

INCORPORATED

Explosives Department, 974 King St., Wilmington 99, Del.

XR52-3



Prevent corrosion and abrasion . . . uncover wear before it causes damage and costly downtime . . . by cleaning regularly with MALSBARY Heavy-duty Cleaners. Clean equipment is easier to repair, too—saves up to 40% of mechanics' time. MALSBARY patented pumping system delivers plenty of hot solution at 250-400 lbs. pressure, cleans big tractors in 2 hours or less (conventional steam cleaners require 4 to 8 hours).

ONLY MALSBARY GIVES YOU ALL 5 QUICK-CLEANING ACTIONS

1. HIGH PRESSURE STEAM CLEANING.
2. HIGH PRESSURE HOT WATER.
3. HIGH PRESSURE COLD WATER.
4. LOW PRESSURE WET STEAM.
5. LOW PRESSURE WARM WATER.

See for yourself how MALSBARY cuts cleaning time and helps reduce repair costs and downtime. Mail coupon TODAY for on-the-job demonstration. 21

MALSBARY
SINCE 1921 MANUFACTURING CO.

Room C4, 845 92nd Ave., Oakland 3, Calif.

I AM INTERESTED IN

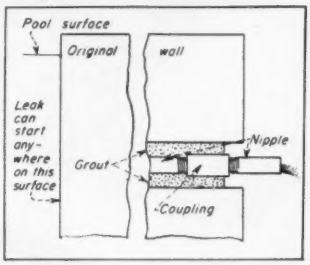
☐ Free Booklets on MALSBARY Cleaners
☐ On-the-job Demonstration
☐ Names of Nearby MALSBARY Users

Name _____ Position _____

Business _____

Address _____

Stops Leak Through Dam



THE BIG CONCRETE DAM on a major river had been completed and the 65-mi pool above it filled, when a leak was spotted. Water came out of the wall (rate: 1 gpm) in one of the rooms located about 10 ft below the pool water line.

There was no way of locating the upstream side of the defect, with so much area exposed to water pressure. The only solution lay in a repair to the downstream side. A concrete plug obviously was the answer. But how to hold fresh concrete in an opening against hydrostatic pressure for 24 hr or so while the plug hardened?

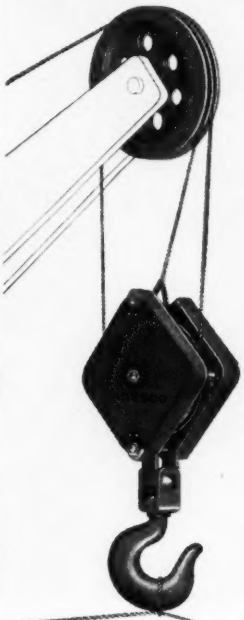
A workman came up with an idea that stopped the leak. He drilled a hole into the concrete with a hammer and a hand masonry drill. Next he screwed a pipe coupling tightly on one end of a ¾-in. pipe nipple 3 in. long. The opposite end of the nipple was roughened to make it hold better when grouted in the wall. Another short nipple was screwed loosely into the free end of the coupling.

The pipe assembly was placed into the drilled hole so that the end of the coupling was about 1 in. behind the wall surface—with the loose-fitting nipple protruding from the wall.

Rich grout was rammed in around the pipe and the wall cavity filled until close to the outer end of the coupling. The open pipe carried away all leakage water, preventing pressure from building up until the grout hardened. After it had hardened, the workman removed the outer nipple and replaced it with a pipe plug. This stopped the leak instantly, and he plastered over the scar in the wall.

H. B. McDermid of Long Beach, Calif., sent in this sketch and the details. In his 50 yr of association with heavy construction, he saw this idea employed first many years ago and had occasion to use it several times himself.

GOOD TACKLE BLOCKS
Protect your wire rope
INVESTMENT!
MADESCO MAKES GOOD BLOCKS

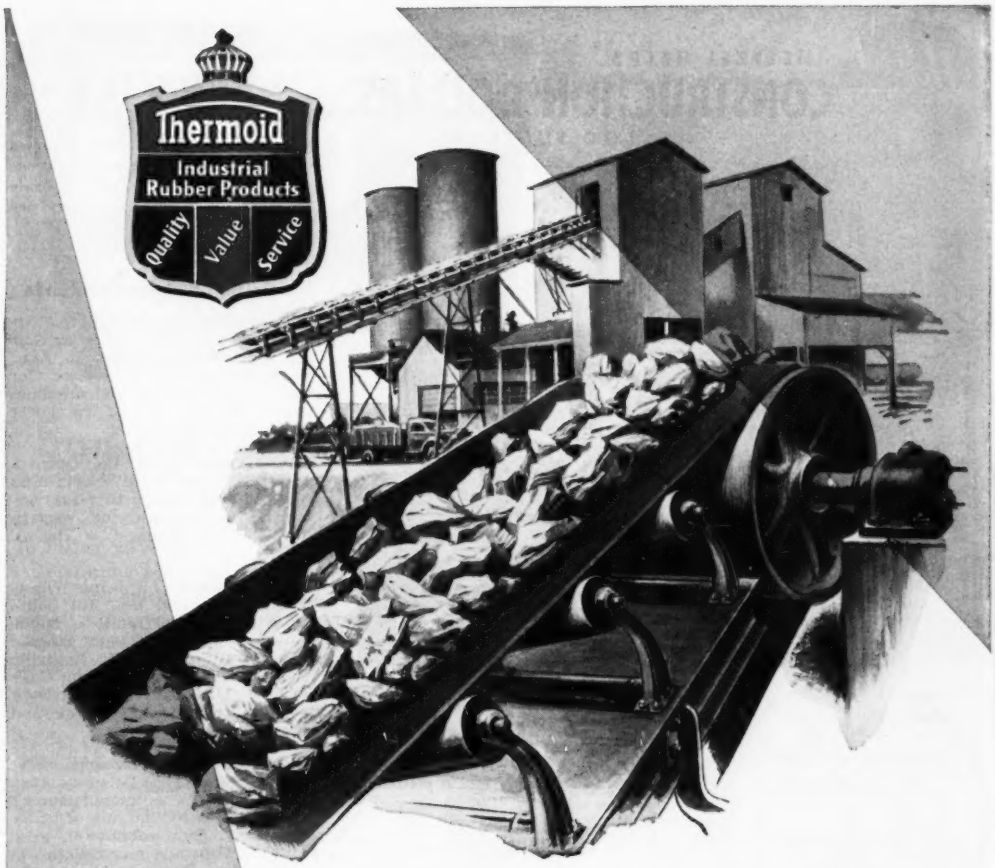


The anti-friction bearings and bronze bushings in Madesco sheaves and blocks, combined with our quality workmanship, assure smooth performance . . . long life for your wire rope.
Madesco products can be designed for every purpose.

Write for complete information today.

MADESCO
TACKLE BLOCK COMPANY
EASTON, PENNSYLVANIA

Over a quarter century of service



"Whatever Your Conveyor Belting Problem . . . *Thermoid Has The Answer*"

Whatever the job—whatever the nature of the materials to be handled—heavy or light, soft or abrasive, hot or cold, wet or dry, uniform or non-uniform in size—there is a Thermoid belt built to do the job at the lowest cost per ton of material handled.

Thermoid belts are made with an extra margin of endurance. You will find they stay on the job long after ordinary belts fail. With Thermoid, you will have fewer delays due to belt breakage or premature wear. Your Thermoid distributor will be glad to help you with your requirements.

Here's The Book That Will Answer Many Of Your Questions

Drop us a line for your free copy of Book No. 3679. It is a handy reference guide, concise and complete. 16 pages of valuable charts, tables and graphs tell how to select the right conveyor or elevator belt for the materials to be handled . . . how to determine capacities, speeds, weights and number of plies.

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

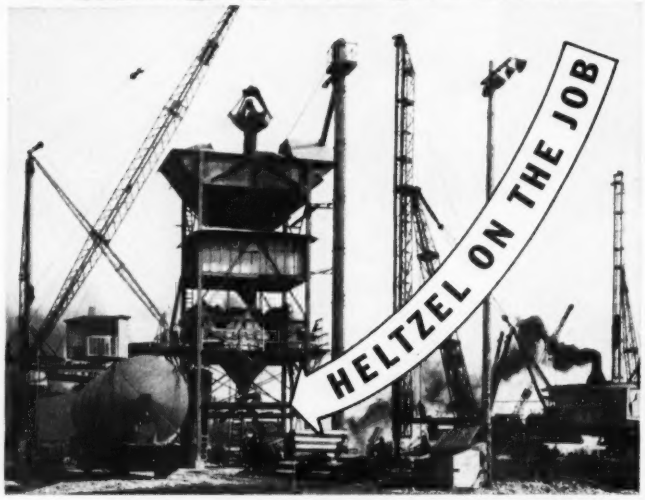
Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

HELTZEL HELPS

CONSTRUCTION DOLLARS GO FURTHER



with RAYMOND CONCRETE PILE COMPANY at GREAT LAKES STEEL CORPORATION

PROBLEM: High capacity batch plant to simultaneously charge both a pumpcrete operation and a fleet of transit mix trucks.

ANSWER: Heltzel engineered batch plant that worked both pumpcrete and transit mix operations with practical perfection and helped Raymond Concrete Pile Company run ahead of schedule.

●The installation consists of a basic Heltzel 300-ton, 4-compartment plant (three 70-ton aggregate compartments; one 311-bbl. cement compartment); a 70' high, 250-bbl. per hour bulk cement elevator; a 1000-bbl. bulk cement recirculator with 33' 6" screw conveyor; a 2-cubic yard batcher to charge two tilt mixers—front end charging; special columns and braces to take care of height.

ASK FOR HELTZEL BULLETIN K-37 DESCRIBING PLANTS AND ENGINEERING SERVICE FOR CENTRAL MIX, TRANSIT MIX AND CONCRETE PRODUCTS OPERATIONS.

The Heltzel Steel Form & Iron Company

Construction Equipment Since 1910

WARREN, OHIO

Flex-Plane

SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Baldwin-Lima Hamilton Corp.: Appoints Lakeshore Machinery & Supply Co., 400 W. Laketon Ave., Muskegon, Mich., distributor for Lima shovels, cranes and draglines in the western half of the lower peninsula of Michigan.

Marion Power Shovel Co.: Opens a parts warehouse at 1017 North 22nd Ave., Phoenix, Ariz., to serve Arizona, Utah, Nevada and western New Mexico. Manager is Hal A. Fisher.

Cleaver-Brooks Co.: Appoints Wilson-Weesner-Wilkinson Co., 310 South 2nd St., Nashville, Tenn., as manufacturer's representative for the sale of boiler equipment. The Nashville firm has been a distributor for C-B's Road Machinery Division. Territory includes 37 counties in Tennessee and 26 counties in Kentucky.

Cleaver-Brooks Co.: Also appoints V. N. Harwood Co., 250 Delaware Ave., Buffalo, N. Y., as manufacturer's representative for the sale of boiler equipment. Eight counties in western New York and four counties in northwestern Pennsylvania are the territory served.

Cummins Engine Co., Inc.: Cummins diesel sales and service for eastern and central Iowa now are being handled by Cummins Diesel Sales Corp., University and Illinois Sts., Des Moines. Acting branch manager is James M. Gleason; Joseph Boston heads the service department.

Joy Manufacturing Co.: Appoints Wilson Machinery and Supply Co., 139 N. Mill St., Lexington, Ky., and 217 N. 13th St., Paducah, distributor for the entire Joy line of construction equipment.

On the Sales Front

Acrow, Inc.: Robert C. Rasmussen has been appointed sales manager of the Chicago Division. He will head up the sale of Acrow shores in Illinois, Michigan, Indiana, Wisconsin, Missouri, Iowa, Minnesota, Kansas, Nebraska, North and South Dakota.

Worthington Pump and Machinery Corp.: W. J. Van Vleck becomes man-

(Continued on page 152)

ON OUTSTANDING JOBS ACROSS THE NATION

BARCO *is the Answer!*

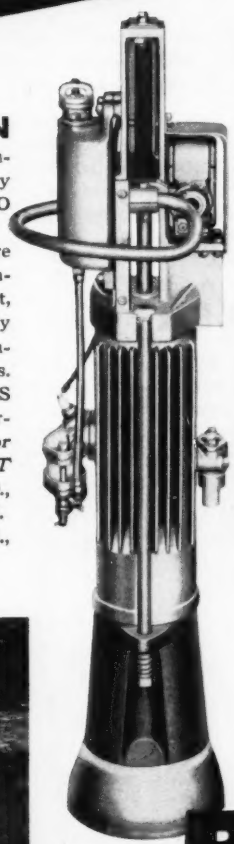
TEXAS DAM—On projects costing millions of dollars, it pays to use construction methods that insure permanence. That's why soil compaction is a very important factor in the construction of dams. This picture shows Barco Rammers working on the Whitney Dam Project on the Brazos River near Whitney, Texas. *Contractors:* L. P. Reed, Inc., and Martin & Grace, Inc., both of Clifton, Texas.

SOIL COMPACTION

is the key to *better construction* on important projects throughout the country —AND ON THESE JOBS, BARCO IS THE ANSWER!

Contractors and engineers, alike, are finding that unless soil is properly compacted during construction, settlement, erosion, and structural damage can easily develop in areas near abutments, foundations and walls, and other critical points.

This is where BARCO RAMMERS quickly pay for themselves! See for yourself—ask for a demonstration. *Send for our latest catalog and new "COST DATA" Bulletin.* BARCO MFG. CO., 1812E Winnemac Ave., Chicago 40, Ill. *In Canada:* The Holden Co., Ltd., Montreal, Canada.



OHIO FACTORY BUILDING—The Austin Company recently attracted nation-wide attention with the design and construction of an ultra-modern plant for The Lincoln Electric Company in Cleveland, Ohio. Evidence of the high standards of construction maintained by The Austin Company can be seen in the use of Barco Rammers in the above picture. The Austin Company has many Rammers in use on building projects throughout the country.

MISSOURI HIGHWAY—The State of Missouri has been one of the leaders in studying the value and importance of soil compaction on highway construction for preventing settling, washouts, and erosion. This picture shows Barco Rammers used by Fred Weber Contractors, Inc., St. Louis, on Missouri's famed *Natural Bridge Road.*

BARCO

"Pegson" Gasoline

RAMMER

For Soil Compaction Close to Walls, Culverts and Abutments — in Trenches, Ditches

FREE ENTERPRISE — THE CORNERSTONE OF AMERICAN PROSPERITY

Make Your Replacements

with the carbureter preferred for original equipment

Marvel-Schebler Carbureters are specified as original equipment on many leading industrial engines and tractors because they give maximum dependability and economy.

Any engine runs better and costs less to operate with a new Marvel-Schebler Carbureter. So, make your replacements with Marvel-Schebler Carbureters. *And remember this!* Engineers recommend that the carbureter on heavy duty equipment be completely rebuilt or replaced after 800 work hours of service in the interest of better performance and lower operating costs.

MARVEL-SCHEBLER
CARBURETERS
MARVEL-SCHEBLER PRODUCTS DIV., Borg-Warner Corp., Decatur, Ill.

MC *Self-Raising* **Tower-Hoist**

THE INDUSTRY'S MOST VERSATILE

- **Picks itself up**
- **Easily extends**
- **Lifting heights up to 94 feet**
- **Single or Double Drum Hoists**
- **Platform speed—100 ft. per min.**
- **Lifting capacity—2,500 lbs.**

Optional Equipment: **Gin Pole Assembly, "Chicago" Boom, Tip-Over Bucket, Truck Mounting, Interchangeable 10' Extensions.**

CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA

SALES AND SERVICE . . .

Continued from page 150

ager of the New York district sales office; C. W. Kramer is the new manager of the Atlanta office; I. W. Leggett becomes manager of the Charlotte, N. C., branch office.

Quaker Rubber Corp. (division of H. K. Porter Co., Inc.): J. R. Lewis becomes sales manager.

Gradall Division, Warner & Swasey Co.: Irwin T. White is named sales manager. Robert L. Groves becomes sales head of the Buffalo district office.

Pioneer Engineering Works: Kensington Steel Co. (both subsidiaries of Poor & Co.): Open a sales office to serve the Northeast at 94 Clinton Ave., Newark, N. J. Roger Lewis and Fred Dolton will represent Pioneer. Wilbur Ellis serves Kensington.

Barber-Greene Co.: E. H. Holt is the general sales manager; Harold W. Newton becomes assistant sales manager, Conveyor Division, and William C. Gifford will function as assistant sales manager, Machine Sales.

Malsbary Manufacturing Co.: Fred A. Rueter becomes eastern salesmanager, with headquarters in Pittsburgh, Pa. He will supervise sales activities for steam cleaners in the eastern and southeastern states.

Smith Engineering Works: Gerald L. Smith has been made executive vice-president and director of sales for Telsmith products.

Baldwin-Lima-Hamilton Corp.: Paul R. Ehrgott will serve as sales manager for shovels of 3-yd capacity and larger. J. W. "Jack" Hardesty will be in charge of domestic sales of all shovels and cranes up to and including 2½-yd capacity.

E. D. Bullard Co.: Paul W. O'Donnell becomes industrial relations manager to work with present Bullard distributors of industrial safety equipment east of the Mississippi.

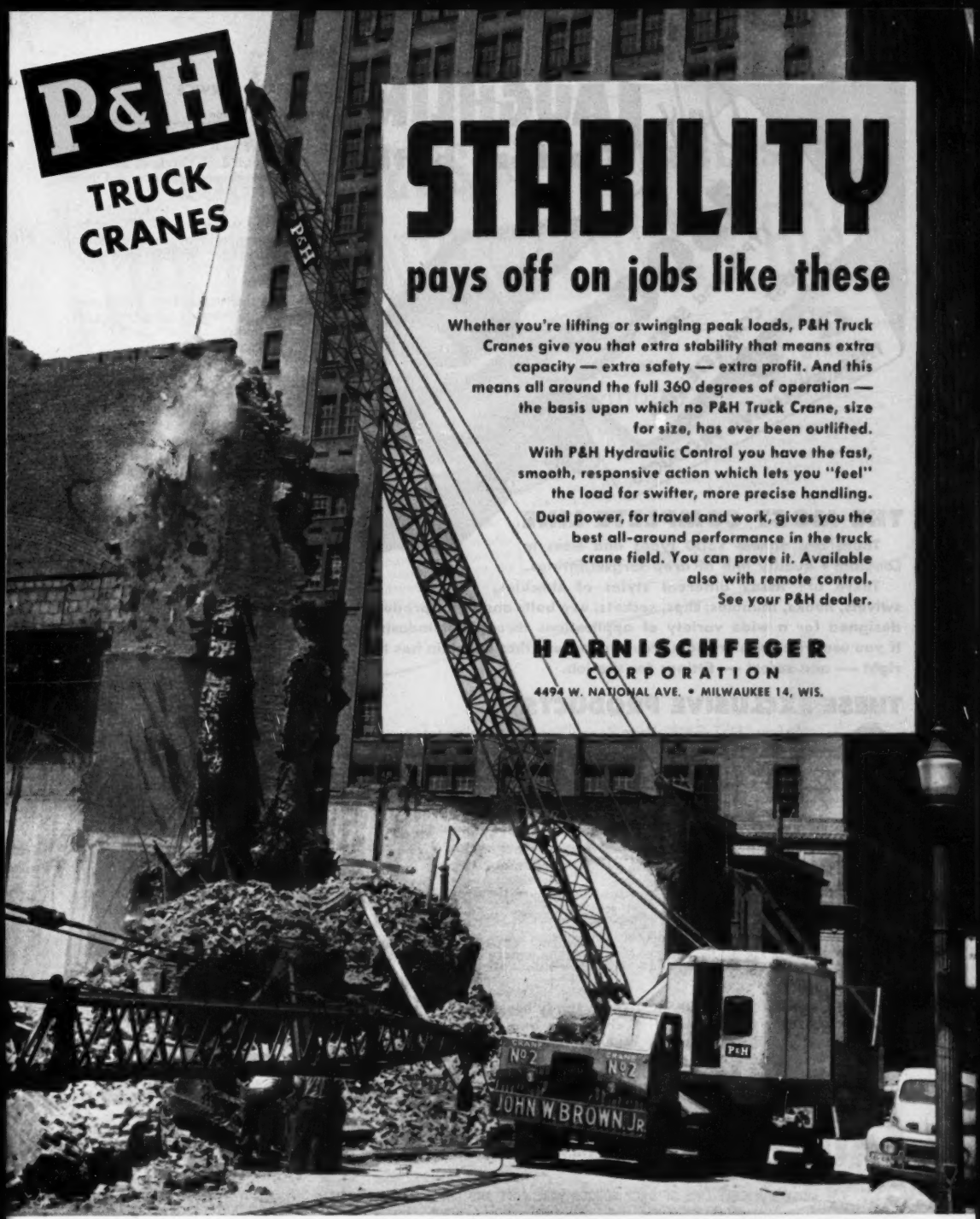
Wilson-Albrecht Co.: Frank X. Mangan has been named national sales manager for the firm's scaffolding equipment.

In the Main Office

Worthington Pump and Machinery Corp.: C. K. Hood has been elected a vice-president and will direct activities of the Public Works, Steam Power, De-aerating, Water Treating and Steam Turbine Divisions.

LeRoi Co.: T. O. Liebscher has been elected president. Simultaneously, G. J. Hamm was named secretary-

(Continued on page 154)



STABILITY

pays off on jobs like these

Whether you're lifting or swinging peak loads, P&H Truck Cranes give you that extra stability that means extra capacity — extra safety — extra profit. And this means all around the full 360 degrees of operation — the basis upon which no P&H Truck Crane, size for size, has ever been outlifted.

With P&H Hydraulic Control you have the fast, smooth, responsive action which lets you "feel" the load for swifter, more precise handling.

Dual power, for travel and work, gives you the best all-around performance in the truck crane field. You can prove it. Available also with remote control. See your P&H dealer.

HARNISCHFEGER
CORPORATION
4494 W. NATIONAL AVE. • MILWAUKEE 14, WIS.

P&H Power Shovels and Truck Cranes are more easily converted for various types of service because hoist and digging drums are on one shaft. The need for auxiliary shafts and gearing is eliminated. Write for literature on the size you need. Sizes up to 8 cu. yds., gasoline, diesel or electric power.

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

THE MOST COMPLETE LINE

There are almost 1500 types and sizes in Laughlin's quality line of drop forged fittings.

There are many different styles of shackles, swivels, hooks, thimbles, clips, sockets, eye bolts and other products designed for a wide variety of applications throughout industry. If you use wire rope or chain, you can be sure that Laughlin has the right — *and safest* — fittings for the job.

THESE EXCLUSIVE PRODUCTS

Safety "FIST GRIP" Wire Rope Clips . . . Fool proof, easy to install Fist Grip clips hold rope more securely, can't go on wrong. Fewer clips are required than for ordinary types, and they will not crush or distort the rope.

SAFETY HOOKS . . . The latch locks the load, will not open until released by operator. Strong, drop forged steel hook has improved latch that leaves 80% of throat opening. 15 sizes; 3 patterns, eye, shank and swivel.

"MISSING LINK" (Reg. U.S. Pat. Off.) . . . Cheaper than welding, safer than cold shut or cast link, "Missing Links" go on in a jiffy and are stronger than proof coil chain. 17 sizes from 3/16" to 1⅞".

CLEVIS GRAB AND SLIP HOOKS . . . These sturdy hooks are easily attached to any welded link chain. Pin and cotter make it easy to attach or remove for use on another job. Needs no connecting fittings or special tools.

Laughlin's new Catalog No. 150 lists the complete line of drop forged wire rope and chain fittings with illustrations, description and specifications. Write for it today.

LAUGHLIN THE THOMAS LAUGHLIN CO.
414 Fore Street
Portland 6 Maine

THE MOST COMPLETE LINE OF DROP FORGED WIRE ROPE AND CHAIN FITTINGS

SALES AND SERVICE . . .

Continued from page 152

treasurer, C. W. Decker assistant secretary and J. R. Gavigan assistant treasurer of this compressor and drill maker.

Macwhyte Co.: George C. Wilder becomes vice-president and assistant general manager of this wire rope company.

Lull Manufacturing Co.: Pat Lamb has been appointed assistant manager of Lull, maker of loaders for construction materials.

Warner Electric Brake and Clutch Co.: Elected Steven P. J. Wood as executive vice-president.

Cummins Engine Co., Inc.: E. D. (Don) Tull is named to fill the newly created position of vice-president for Personnel and Plant.

Detroit Diesel Engine Div. (General Motors Corp.): James A. Hall become chief project engineer.

Broderick & Bascom Rope Co.: David Larkin was elected to the board of directors and A. A. Grosse was named secretary and assistant treasurer of this wire rope firm.

Association Activities

Power Crane and Shovel Association: C. B. Smythe of the Thew Shovel Co., Lorain, Ohio, is president for 1952.

Associated General Contractors of West Virginia: D. R. Agnew, of the Agnew Construction Co., Ronceverte, W. Va., is president. Vice-presidents include Paul Anderson and J. D. Higginbotham, Charleston; C. H. Jimison, Huntington; Leo Vecellio, Beckley; and James E. Coombs, Morgantown. C. J. Kuhn, Charleston, is secretary and W. E. Abbitt, Charleston, is treasurer.

Associated General Contractors (Southern California Chapter): Elected president for 1952 is R. A. Smith of the P. J. Walker Co. Vice-presidents are Harry L. James of the Guy F. Atkinson Co.; C. L. Parkhill of Parkhill Wade; and Spencer Webb of Webb & White. Donald E. Reed of Stanton Reed Co. becomes treasurer and W. D. Shaw is manager.

Portland Cement Association: Carl D. Franks has been appointed to the newly created position of executive vice president.

Constructors Association of Western Pennsylvania: Frank O. Patterson, of the Patterson Construction Co., is president for 1952; Howard H.

(Continued on page 158)

TODAY'S NEWS IN PORTABLES

THE GARDNER-DENVER 600!

IT'S A 600 FROM THE GROUND UP

Here's a brand-new machine that gives you famous Gardner-Denver dependability in a 600 cubic foot portable. Compressor, engine and undercarriage are all specially designed for high capacity performance.

And a FULL 600

Delivers a full 600 cubic feet of air per minute, actual capacity, at 100 pounds pressure. The compressor is an 8 x 6½ x 6, operating at only 1200 r.p.m.

SMOOTH RUNNING

Moderate operating speed and balanced construction minimize vibration.

FULLY WATER-COOLED

Fully water-cooled compressor cylinders assure low discharge temperatures on the hottest day of the year—properly lubricated cold weather starts. Two-stage design insures higher output for all work.

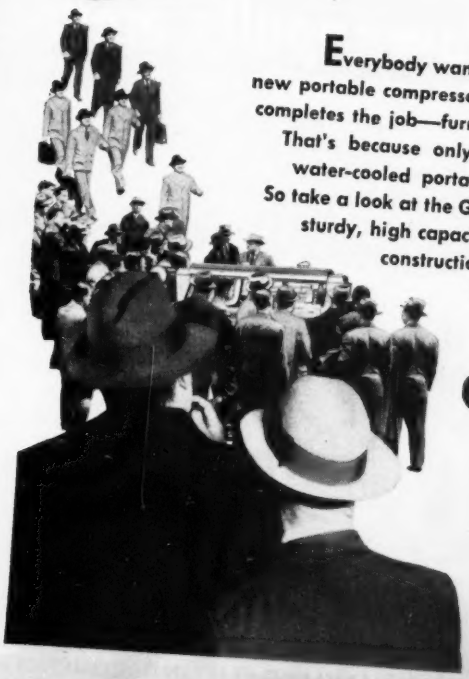
Engineered for Economy

Extra-large valve areas and air passages — properly engineered ratio of low pressure to high-pressure cylinders — are some of the features that raise compressor efficiency—lower operating costs.

RUGGED, STRONG UNDERCARRIAGE

Travels access roads safely—enables you to spot the Gardner-Denver 600 anywhere. Deep oil sumps on both compressor and engine permit off-level operation when necessary.

MORE VALUE FOR YOUR MONEY



Everybody wants a look-see when Gardner-Denver introduces a new portable compressor. They know from experience that a Gardner-Denver completes the job—furnishes low-cost compressed air every single day. That's because only Gardner-Denver makes a two-stage, fully water-cooled portable for all weather, and for any altitude. So take a look at the Gardner-Denver 600 today. See for yourself how this sturdy, high capacity portable can speed your big tunnel and construction jobs. It'll give you new ideas on low bidding. Or write us for the specifications.

SINCE 1859

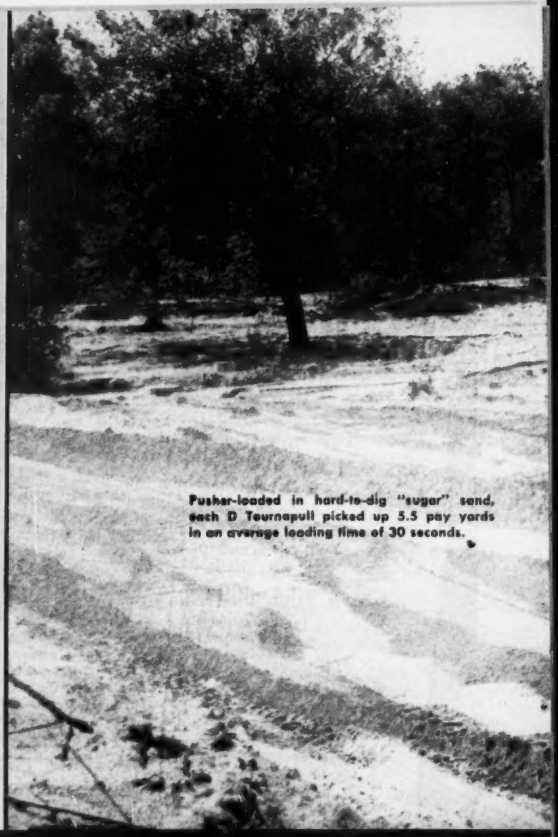
GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

In Michigan Sugar Sand



Pusher-loaded in hard-to-dig "sugar" sand, each D Tournapull picked up 5.5 pay yards in an average loading time of 30 seconds.

Ham & Timmer's 2 D Tournapulls move

Hauling 1200' to fill, and returning up 1500' of 0 to 9% grade, the 2 "D's" averaged 10 m.p.h. round trip . . . delivered a total of 26 loads, 142 pay yards hourly.

With big, low-pressure 65" and 56" wide base rim tires and power proportioning differential "D's" had plenty of traction and load flotation to help lick this 100,000-yd. sand job.

LETOURNEAU LET EQUIPMENT

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

1420 yards daily on 2700-ft. cycles

To prepare a real estate site at Grand Rapids, Ham & Timmer of Grandville, had to move 100,000 yds. of pure Michigan blow sand. Material was extremely abrasive, tough to load . . . and so loose and shifting under foot that it created 200 to 250 lbs. rolling resistance. Ham & Timmer started the job with 2 crawler-scraper rigs . . . then to help put production on schedule, brought in their 7-yd. D Tournapull. The contractors were so pleased with its performance in the tough going, that they bought a second electric-control, 122 h.p. Tournapull.

Average 2700′ cycle every 4.5 min.

Each pusher-loaded "D" heaped 5.5 pay yds. in an average of 30 seconds. On a typical 2700′ cycle, each rig completed 13 trips . . . delivered 71 pay yards per hour. Combined production for the two Tournapulls, amounted to 142 pay yards hourly, or an average of 1420 pay yards during every 10-hour day.

"100% satisfied . . ."

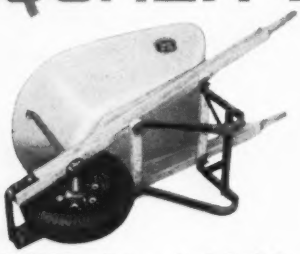
On this job, the owners figure "95% plus" operating efficiency for the two rubber-tired units. G. J. Ham, partner, speaking of their Tournapulls, says . . . *"We're 100% satisfied. The 'D's' move dirt faster and cheaper per yard than any equipment we've ever owned . . . will go loaded where crawler equipment won't go empty."*

You'll be surprised, too, at the big hourly yardages and low cost per yard you can get with D Roadster Tournapulls on both production and maintenance-type dirtmoving jobs. Ask your LeTourneau Distributor to show you other owner-verified reports of the "D's" performance on work similar to your own. He will be glad to prove performance on your job by a demonstration.

Tournapull—Trademark Reg. U. S. Pat. Off. DP-619

R. G. LeTOURNEAU, Inc., Peoria, Illinois

high in QUALITY



FROM handles to wheel, Buch Barrows incorporate superior construction. For example: Longer handles (61") provide easier "lift", prevent user from kicking plank rest. Made of carefully selected hardwood, they are shaped to fit the hand and designed for perfect balance. The Buch wheel is grommeted and riveted—*not* bolted—to insure extra strength. Tires are the best money can buy . . . top grade, nationally known and advertised . . . guaranteed.

In addition, we firmly and irrevocably believe in the sale of our products through wholesalers only. You can depend on Buch to maintain its 100% Wholesale Sales Policy because we base our success on the success of our wholesalers.

The Quality of a Buch Barrow Is Always Higher than Its Price

BUCH MANUFACTURING CO.
ELIZABETHTOWN, PENNSYLVANIA

SALES AND SERVICE . . .

Continued from page 154

Sturdy of the Dravo Corp. is vice-president of the Heavy Division; William R. McQuade of the James H. McQuade & Sons Co. is vice-president of the Highway Division; Dan Dinardo of Dinardo, Inc., is treasurer; James A. Nardulli, of Nardulli & Sons, Inc., is secretary; and Charles Booth, Jr., of the Burrell Construction & Supply Co., is assistant secretary.

Associated General Contractors of America: President for 1952, Arthur S. Horner of the A. S. Horner Construction Co., Denver. Vice-president, C. P. Street of the McDevitt & Street Co., Charlotte, N. C.; treasurer, William Muirhead of the William Muirhead Construction Co., Durham, N. C. H. E. (Doc) Foreman continues as managing director.

Pocket-Size Manuals On Accident Prevention

REPRINTS in handy form of many of the sections in the AGC "Manual of Accident Prevention in Construction" are available from national headquarters and most chapter and branch offices.

The complete AGC manual was revised in 1949, and its recommended practices frequently are made mandatory by specifications of contract awarding agencies. It is recognized as a standard by the American Standards Association.

But the manual is too large, too comprehensive and costs too much for a contractor to supply each workman individually—where job safety begins. New, pocket-size manuals dealing with safety on only one or several phases of construction carry the story to the employee right on the job.

They contain, in general, the same material and page numbers as the sections they represent in the complete manual. Each pocket manual has extra (blank) pages in the back to keep notes.

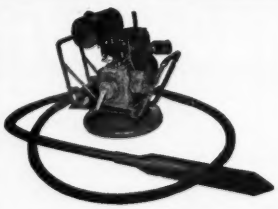
Of the 14 manuals, Booklet C, dealing with Section 18 on scaffolding, is a good example. It starts off with the statement: "Falls from a height rank second only to motor vehicles as the most frequent cause of fatal accidents in the U.S."

The booklet is chock full of specifications, dimensions and sketches of all standard types of scaffolds and tells the reason for their design.

What's the capacity of this block?

If you don't know.. *don't use it!*

Specify
AMERICAN CROSBY
Load-Rated!
BLOCKS
Safe working capacity embossed on side plate
DISTRIBUTORS EVERYWHERE
AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA



Concrete
VIBRATORS
Gasoline Engine or Electric Motor Driven
CONCRETE GRINDERS

OTHER PRODUCTS
FRONT END SHOVELS
for Industrial Tractors
HEATING KETTLES
for Asphalt and Tar
AGGREGATE DRYERS
for Stone and Sand
ASPHALT PLANTS
Portable — Stationary
Write for Circulars

White Mfg. Co.
ELKHART 6, INDIANA

the D-C Rectifier Welder with ARC-DRIVE CONTROL

. . . INSTANTANEOUS RESPONSE TO ARC-LOAD CHANGES

. . . INSTANTANEOUS RECOVERY

. . . REDUCED ARC BLOW

. . . COMPLETELY ADJUSTABLE BY OPERATOR

Westinghouse RA Welders with new positive arc-drive control now prevent shorting when used on "drag" welding applications. In addition, they allow complete penetration on root passes of vertical and overhead welds. Arc-drive control is obtained by adjusting the ratio of short-circuit current to welding current without changing open-circuit voltage. Actual amount of arc-drive current can be varied by the operator.

For information on this improved RA Welder or other Westinghouse Welding Equipment, write Westinghouse Electric Corporation, Dept. DC72, Welding Division, Buffalo, New York.

J-21607-1

Westinghouse

WELDING EQUIPMENT

You Get More for Your Money

IN SPEED—SAFETY—VERSATILITY—

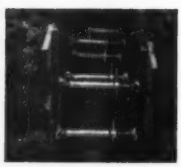
with

SIMPLEX RATCHET LOWERING JACKS

For every jacking job—pushing, pulling, raising, lowering—you'll find Simplex Jacks give you *more for your money*... have a *wider range* of usefulness.

Simplex Ratchet Lowering Jacks are available in capacities from 1½ tons to 35 tons... with full capacity lift on *cap* or *toe!* Fast and safe, they operate notch by notch on the downward stroke of the lever—cannot be tripped. Speed trigger—used to drop rack bar to desired position for extra speed—can be operated only when there is no load on Jack. For safety's sake... insist on Simplex.

Protect against cave-ins with Simplex TRENCH BRACES



Made of steel drop forgings, with ball and socket joints at each end for quick adjustment and tight grip. Simplex Trench Braces are adjustable to any width trench and are sold with or without pipe in all sizes. Protect against cave-ins, injuries and costly re-digging.

Cut friction 88% with Simplex HEAVY DUTY SCREW JACKS

A single large steel pivotal ball, nested in a hardened ball seat under cap, centers the load on Simplex Heavy Duty Screw Jacks and reduces friction by 88%. Ball won't flatten—cap can't slip. 4-way and Ratchet Head Types. Available in 31 models of 10 to 24 ton capacity.

Get more jacking power—longer life with Simplex HYDRAULIC JACKS

Simplex Hydraulic Jacks are available in eight models with capacities from 3 to 100 tons. These jacks operate vertically or horizontally... have drop-forged steel caps, pressure-tested bases, non-sticking, spring-controlled ball valves and high-pressure packing seals of Neoprene. Safety-tested to 50% over rated capacity. Single and double pumps.

WRITE FOR GENERAL CATALOG NO. 50

Simplex
LEVER • SCREW • HYDRAULIC
Jacks

TEMPLETON, KENLY & COMPANY

1008 SOUTH CENTRAL AVENUE • CHICAGO 44, ILLINOIS

Safety Lapses Bring Death

THESE ACCOUNTS of construction fatalities are selected from a number that occurred on Corps of Engineers jobs in a recent month. They point particularly to momentary lapses in firm supervision regarding safety practices.

• **In the Kansas City District,** a 20-yr-old crane oiler was electrocuted. A crew had been assigned to remove a large piece of concrete lying in a deep trench. Operations were begun with a crane, which had to move in under a 13,200-v power line 25 ft above the ground.

The victim and two laborers held the load line clear to prevent fouling as the machine moved into position. Either a direct contact or a high-tension arc sent current down the load line knocking the three men down. The two laborers were wearing rubber boots and survived. The oiler (without boots) was killed.

• **In the New England Division,** a rigger, age 36, was crushed by a 19-ton boiler being lowered 8 ft from temporary blocking to finish floor. He placed himself into position between boiler and blocking and, at that particular moment, one of the jacks kicked out and the boiler fell, pinning the rigger.

• **In the Norfolk District,** a Government painter, age 44, was electrocuted when he came into contact with uninsulated wires 4½ ft above a sheet metal-clad garage roof he was painting. The building had only recently been moved and there was no immediate need to place it under the power line.

• **In the Philadelphia District,** a Euclid bottom dump operator was crushed under his machine when it rolled over the edge of fill. He approached the fill area at excessive speed and was given a signal to slow down. He may have reduced speed somewhat but dumped almost immediately close to the edge of the 40-ft bank, and the rear wheels slid over the top.

As the Euclid began to turn over, the operator jumped—on the downgrade side—but the big wagon struck him. The 20-yr-old driver had disregarded all instructions to stop his practice of "hot rodding."

Cummins® Diesels
do so many jobs - so much better

Shovels, cranes, industrial locomotives

Drilling rigs, centrifugal pumps, generator sets

Buses and on-highway trucks

...because they're custom-built to fit the job

Earthmovers, logging yarders and loaders

Off-highway trucks, crawler tractors

Work boats, pleasure craft

Lightweight, high-speed Diesels (50-550 hp) for these and many other uses

---

...because they're

BUILT NOT ONCE BUT TWICE

Rugged, lightweight, high-speed Cummins Diesels are at work everywhere. Each engine is built *twice*. It's assembled, run-in tested, disassembled and inspected, then reassembled and tested again. This extra care in building, plus Cummins exclusive fuel system and an efficient and expanding service and parts organization, means minimum "down time", more power and profits for the user. See your Cummins dealer.

CUMMINS Dependable DIESEL

TRADEMARK REG. U. S. PAT. OFF.

Diesel power by CUMMINS

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

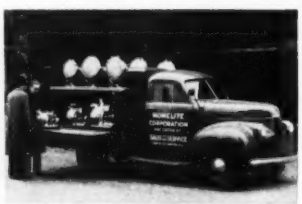
Export: Cummins Diesel Export Corporation • Columbus, Indiana, U.S.A. • Cable: Cumdiex

Get Greater Efficiency from Power Tools

...with HOMELITE Carryable Generators

There's no doubt about it, long electric cables eat up valuable power . . . which is bad for you and bad for your tools. This loss of power results in loss of tool efficiency . . . loss in production per hour. It puts a strain on the tool's motor; causes quicker dulling of a tool's cutting edge. It results in more down-time for costly repairs to tools.

You can eliminate this expensive waste by operating your tools with a Homelite Carryable Generator. Without delay, without trouble you can set your Homelite right where your tools are operating. No long cables will be necessary. You will get the power you need to run your cost-cutting electric tools at peak efficiency, at all times. Write for free demonstration.



Homelite Field Service
Keeps your Homelites on the go

At all times Homelite Factory Branch Organizations are ready and equipped to give you fast and efficient service on Homelite Generators, Pumps, Blowers or Chain Saws. Another Homelite plus.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE CORPORATION

904 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Crane Delivers Concrete Pipe

LARGE CONCRETE SEWER PIPE was cast close to the job site and then transported directly to trench-side by crane during construction of a $4,813,000 addition to the Evansville, Ind., sewage disposal system.

The contract calls for 6 mi of trunk sewers, using pipe sizes from 42 to 120 in. ID. The 27 mi of laterals require pipe from 12 to 42 in. ID. Prime contractor is the Ryan Construction Co. Queen City Concrete Pipe Corp., Cincinnati, has a subcontract to supply the pipe.

Queen City set up a pipe fabricating plant within economical hauling distance. Steel forms are placed on end, reinforcing steel is set in and concrete poured by a gantry moving across the line. The cast pipe then is put through a series of steam-curing and finishing steps for about 12 hr; forms are stripped after 2 hr.

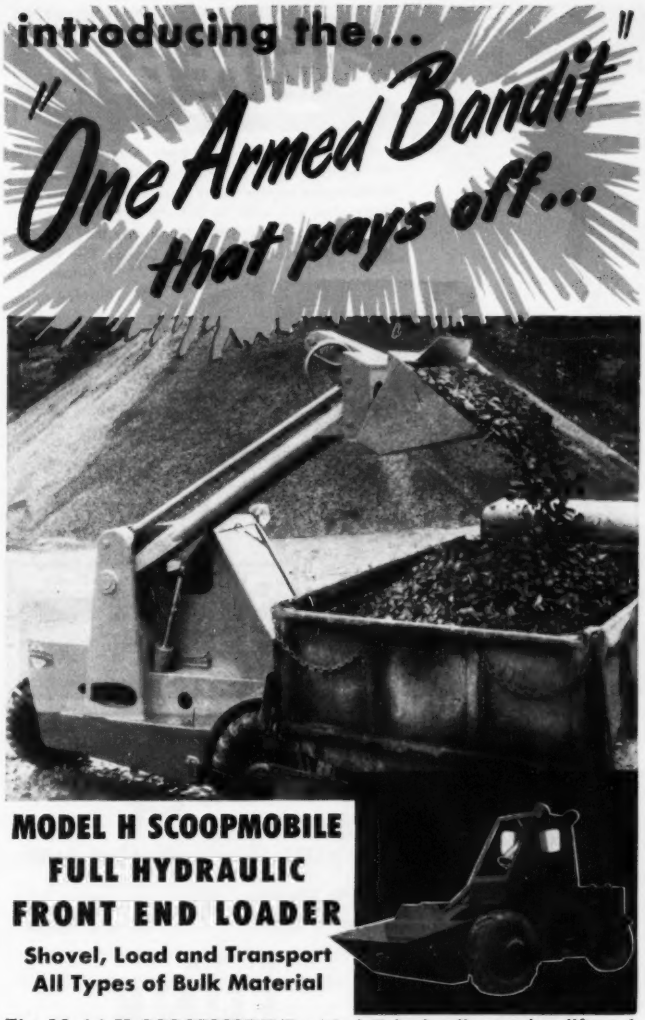
Easy Does It

Delivery is next. For these heavy pipe sections, Queen City uses a LeTourneau Model EC-15 Tournacrane, equipped with a short jib boom. It is backed up to the pipe, and a "belly-band" suspended from the crane hook is lowered over the upright pipe. The crane operator goes to the rear of the pipe and tightens the belly-band with a ratchet screw. Skin friction holds the pipe securely for transport.

The crane then raises the pipe from the ground, hauls it to location and sets it down again on end for 7 days of curing before it is placed underground. All the work of moving is done by one man and the Tournacrane — including pickup and setting down on the site. The Tournacrane moves handily over residential streets, both surfaced and dirt roads, at 10 to 15 mph.

The 120-in. pipe sections are 6 ft long, have 10-in. walls and weigh 12.8 tons. Included are 2,016 lb of reinforcing steel. Pipe 108 in. ID is 8 ft long, has 9-in. walls and weighs 13.8 tons. All pipe lengths were designed to keep pipe section weights between 12 and 15 tons.

By locating the pipe plant within crane-hauling distance of the job, the contractor eliminated long-haul costs and could enter a competitive bid.



The Model H SCOOPMOBILE with full hydraulic steering lift and bucket control is an outstanding material handler. Built for hard work, it gives top performance under all conditions. Planetary drive with 3-to-1 reduction ratio gives dependable power for all operations. Conveniently located finger-tip controls give the operator in cab full-vision command of every movement. Vickers hydraulic power steering gives positive control and lessens operator fatigue.

The versatile Model H SCOOPMOBILE with ¾ cu. yd. scoop has rated lifting capacity of 4,000 pounds and standard dumping height of 8 feet. Quick-change attachments include swivel-type concrete hopper, lift forks, special fertilizer or hay fork, and crane boom...and make the Model H SCOOPMOBILE an efficient multi-purpose unit.

EXTRA-LOW IN INITIAL COST... EXTRA-HIGH IN EFFICIENCY

Write for literature and name of your nearest Mixermobile dealer.

MIXERMOBILE DISTRIBUTORS

MIXERMOBILE • SCOOPMOBILE
STATIONARY MIXERS • DUO-WAY SCOOP

MIXERMOBILE

LIFT TRUCKS • TOWERMOBILE
TELESCOPIC LIFT • STATIONARY TOWER

Box 7527 • Portland 20, Oregon

a SAFE Bet!

You're sure to win with these easy-wheeling Sterling barrows. Why? Because Sterlings are made to outlast any barrow on the market. Sterlings are engineered and built to take hard punishment, over a long period of years. That's why they cost less. Get the facts. Write for Catalog No. 61.

STERLING C5W
Maximum capacity 5 cu. ft, 16 gauge tray, all-welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

Choice of wood handles or tubular steel frame . . . steel wheel or pneumatic tired wheel.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

DOUBLE the POWER

and you double the use

of your FORD Tractor

WITH A

FUNK CONVERSION KIT

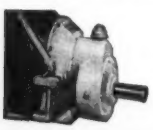
FUNK Products include:

Straight Power Take-Off Clutches

Right Angle Take-Offs

Front End Take-Offs

Gear Reduction Units and Heavy-Duty Clutches



You can do unbelievable jobs with ease when you equip your Ford Tractor with a regular 100 h.p. V-8 or 95 h.p. 6-cylinder Ford engine, on your old or new tractor, with our change-over kit. Increases operation time, and enables tractor to handle heavier equipment and accessories. Conversion costs about 1/3 as much as most tractors of same power. Install it yourself or have your dealer do it. Write TODAY for specifications and prices.

FUNK AIRCRAFT CO.

3303 AIRPORT DRIVE COFFEYVILLE, KANSAS

Field Lubrication of Wire Rope

SIMPLE, BUT REGULAR CARE is the answer to proper lubrication of wire rope in service, according to the Macwhyte Company. Although quality wire cables are lubricated internally with a force-fed lubricant to cover every wire during manufacture, it is necessary to apply additional lubricant where ropes are in service for long periods or where conditions tend to contaminate or remove the original material.

For field application, a light fluid lubricant that will penetrate to the interior of the wire rope, also spreading over the outside surface, is the best wear insurance. However, it will not last long on busy construction machinery and must be applied regularly. In this connection, frequent applications in small quantity are preferable, to give adequate lubrication of the wires and at the same time avoid dripping and contamination of other equipment.

General industrial cables used on cranes, excavating equipment and for skip hoist and mine hoist use are protected by dressings such as the SV wire rope lubricants recommended by Macwhyte engineers. This dressing is a derivative from a petroleum residue and is used most generally in two grades: SV light and SV medium.

For Extra Penetration

A third grade, SV light special, has extra penetrating qualities and is suited to cold weather operations. These lubricants contain about 2% lime soap and are fluid at room temperature. Application can be by brush, swab or spray equipment.

Intervals between applications depend upon operating conditions of the construction equipment using the cable and the type of exposure involved. If no lubricant is visible on outside strands, or if the lubricant left in the valleys between strands is hard and dry, the rope should be given a dressing.

A safe plan is to apply a small amount frequently and eliminate the chance of dressings becoming hard and losing their penetrating and lubricating qualities. Internal and external lubrication are equally important.

ENGINEERED TYING DEVICES, ANCHORAGES and ACCESSORIES for CONCRETE CONSTRUCTION

DON'T EXPECT RICHMOND RESULTS UNLESS YOU SPECIFY "RICHMOND" FORM-TYS AND ACCESSORIES

Imitation may be a form of flattery—but it's the cause of considerable confusion and dissatisfaction in this industry. For example, each of the products listed here is a Richmond FIRST—developed and introduced by the company that pioneered in bringing form-tying equipment to its present high state of efficiency.

Don't be misled on this point when you are offered products of similar description and appearance made by other manufacturers. If you want dependable Richmond quality and performance, don't compromise with copies or substitution, call your shots—specify "RICHMOND".

RICHMOND SCREW ANCHORS AND BOLTS—Steel bolts with special lag thread fits helical coil of flat steel wire—provides temporary or permanent cast-in-place anchorage to concrete.

RICHMOND SNAP-TYS—Insure exact wall thickness—provide fast, accurate, economical form erection and stripping.

RICHMOND TYSCRUS—A strong, simple and fast-acting form tie for medium and heavy concrete construction.

RICHMOND TIE DOWN TYSCRUS—Used to tie the form down by means of a wired connection to a Hairpin or Tyloop imbedded in the footing.

RICHMOND TYLOOPS—Single or double looped wires welded to a helix coil provide easy rugged anchorage for forms, braces and brackets.

RICHMOND TY-FRAMES—Four coils welded to a TRUSS-like arrangement of wire struts for rigid support of stadium riser forms and anchoring seat brackets.

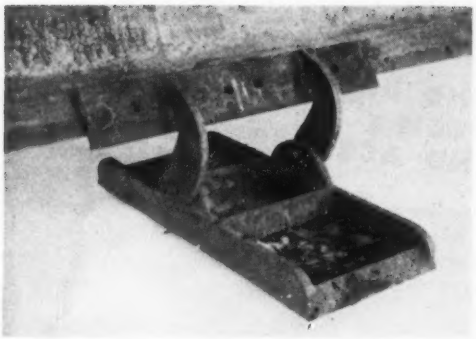
RICHMOND TYHANGERS—Designed to support the concrete forms for decks, slabs and beam and girder fireproofing from structural steel framework.

RICHMOND TILT LOCK ASSEMBLIES—A she-bolt system with the special advantages of a coarse-threaded outside rod, engaged by fast-acting, slidable, Tilt-Lock Clamps.

I HEAR THERE'S A LOT OF PHONEY MONEY 'ROUND THESE DAYS.
YUP—SOME WISE GUY'S ALWAYS FIGURIN' HE CAN FOOL FOLKS WITH AN IMITATION OF THE REAL THING.
SCREWY
TY
INSIST ON RICHMOND
... AND BE SURE IT'S RICHMOND!
Richmond
SCREW ANCHOR CO., INC.
816-838 LIBERTY AVENUE · BROOKLYN 8, N.Y.

Get your "Screwy" or "TY" button—write to Andy Watt at Richmond, 816 Liberty Ave., Brooklyn 8, N. Y.

RICHMOND KNOW-HOW—DEPENDABILITY—SERVICE—ESTIMATES & JOB PLANNING



UNIT TV*

Terrific Value...
IN EVERY CHANNEL OF OPERATION!

Select
YOUR FAVORITE UNIT STAR

- ★ 357 Mobile Type ½ Yard Excavator Crane up to 9 tons.
- ★ 614 Crawler Type ½ Yard Excavator Crane up to 8 tons.
- ★ 1020 Crawler Type ¾ Yard Excavator Crane up to 10 tons.
- ★ 1520 Mobile Type ¾ Yard Excavator Crane up to 20 tons.
- ★ 1014 Truck Crane ½ Yard Excavator Crane up to 12 tons.
- ★ 1520T Truck Crane ¾ Yard Excavator Crane up to 20 tons.

All Models Convertible to ALL Attachments.

UNIT 1520T Crane offers "WIDE RANGE MOBILITY" plus a 20 ton lifting capacity and ¾ yard for excavator service. It is mounted on a 3-axle, tandem drive carrier, designed and custom-built for heavy duty operation. DUAL POWER — one engine for travel, one for lifting or digging. Air brakes on all four rear wheels assure the operator of safe traffic speed travel. Unit's Full Vision Cab offers complete visibility for safe operation.

UNIT 1520T has 10 speeds forward and 2 reverse. Weight in excess of 50,000 lbs. assures maximum stability at any point of full-swing operation. Air control steering provides for smooth, effortless driving. An independent worm-type boom hoist permits power raising and controlled lowering of the boom at high speeds. Balanced hook roller construction assures increased stability of upper structure. Retractable high A-Frame handles capacity loads on an extended boom for long radius crane work.

Write for catalog No. 4000 and get all the facts.

UNIT CRANE & SHOVEL CORP.
6305 West Burnham Street
Milwaukee, Wisconsin

UNIT "T-V SET"!
Novel UNIT brochure portrays the complete line . . . illustrates 10 reasons why UNIT is a better machine. Send for your copy. It's Free.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

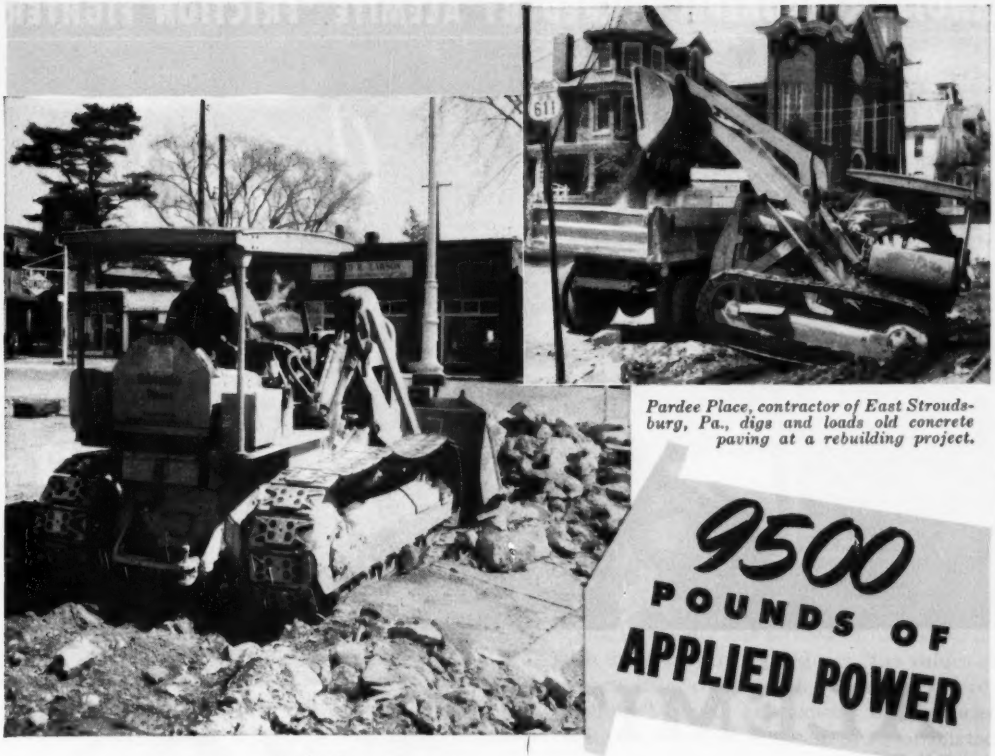
Tractor-Dozer Peels Logs

PAUL BUNYAN probably could have done the job with his bare hands, but when the Lincoln Lumber Co. of Spokane decided to use 70-ft larch logs on 4-ft centers as roof beams for a combination flat-top garage and shop building at its woods headquarters near Inchelium, Wash., some other method of peeling the timbers than the conventional hand drawknife had to be devised.

The oversize plane shown, attached to a bulldozer blade, did the trick. Logs were placed in a shallow trench, and the tractor simply made successive passes, with the weight of the blade resting on the plane. The logs were turned between passes by a tractor using a chain and hook. Both time and expensive hand-labor were saved with this peeler, designed by architect Kenneth Brooks of Spokane.

Construction of the 128 ft 8 in. x 70 ft 10 in. building featured major use of materials drawn from the company's adjacent forests and its mill a few miles downstream on the Columbia River. A clear span of 52 ft permits use of the main floor by three big logging trucks and as many large tractors. A space of 18 ft along one side makes room for two floors of auxiliary rooms and offices.

Lincoln Lumber is logging on the Colville Indian Reservation on the west side of the Columbia above Grand Coulee Dam. The sawmill is located downstream on the opposite side. Rough lumber is barged upstream to a railhead near Kettle Falls, then shipped to Spokane for "milling in transit" at the plant of the parent Western Pine Manufacturing Co.



Pardee Place, contractor of East Stroudsburg, Pa., digs and loads old concrete paving at a rebuilding project.

9500 POUNDS OF APPLIED POWER

MAKE *HASH* OF CONCRETE...

Contractor digs and loads old paving with HT4 TRAXCAVATOR!

One man on the seat of the HT4 TRAXCAVATOR controls 9,500 pounds of pushing power concentrated on the rugged bucket . . . he has a lifting power of over 6000 pounds. This applied power digs out old, cracked concrete paving in loadable chunks.

The HT4 will handle this job and hundreds more just as tough. It's built with durability . . . a machine that can turn in profitable production on concrete-busting and easily make big money on "soft" digging, loading and grading tasks.

TRAXCAVATORS are unit-engineered to "Caterpillar" Diesel Tractors for longer life, greater production and lower costs. Ask your "Caterpillar" Dealer for information on the model that can do your work — at a profit . . . or write direct for further information.

TRACKSON COMPANY, Milwaukee 1, Wis.
A Subsidiary of Caterpillar Tractor Co.

TRACKSON

TRAXCAVATORS®
TRACLOADERS
PIPE LAYERS
EARTH AUGERS

ANOTHER PROBLEM SOLVED BY ALEMITE "FRICTION FIGHTERS"

Greasing big "dozers" on the go

...ON THE JOB!

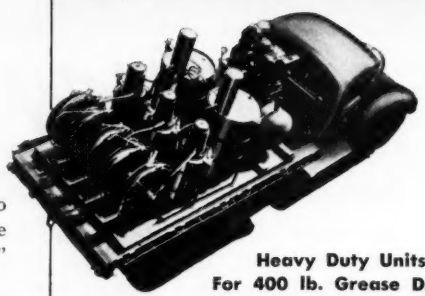
ALEMITE

portable service stations

Save Time! By bringing complete power lubrication to trucks, tractors, equipment—right on the job. Genuine Alemite air-operated pumps deliver grease "refinery clean" direct from barrel-to-bearing.

Save Money! By cutting the costly "downtime" required for lubrication . . . increasing the output of both men and machines . . . slashing operating costs.

Save Equipment! By reducing greatly the possibility of bearing failures. By keeping earthmoving rigs running smoother, longer—no matter how far afield they may be!



Heavy Duty Units For 400 lb. Grease Drums

Designed to handle the biggest, toughest jobs—under the most severe operating conditions. These units feature burly, super-efficient "POWERHOUSE" Pumps that deliver lubricant direct from original 400 lb. drums. End the need for frequent drum changing. Units consist of high and low pressure pumps, air compressor, reels and hose for pressure gun grease, gear oil and air.

Standard Duty Units For 100 lb. Grease Drums

Featuring the famous Alemite "Atomic" Pump, these units deliver lubricant direct from 100 lb. drums. Consist of pumps, up to five reels, delivery hose and air compressor. The matching steel bases can be fastened together with side rails . . . mounted on a small truck or trailer and quickly driven from place to place.

Get this FREE book!

Send today for free illustrated catalog describing this equipment. Write to Alemite, Dept. F-42, 1850 Diversey Parkway, Chicago 14, Ill.

S-E-C-T-I-O-N-A-L-I-Z-E-D TOO!

To fit your needs *exactly!* Yes, whatever selection of high pressure or gear-oil pumps and reels you require for 100 lb. drums, you can easily combine them into one portable rig for on-the-job lubrication!

ALEMITE

A PRODUCT OF SW STEWART WARNER

Where you will find THE REAL REVOLUTION

"If we keep in mind the values of opportunity, competition, democracy, productivity, then it is our capitalist society which is the truly revolutionary one – the only society which offers true hope to the masses for release from the long nightmares of tyranny. It is we, not the Marxists with their reactionary ideas of the good dictator, who have the truly constructive, the truly revolutionary ideal."

– from "Capitalism" by David McCord Wright.

If we can only win recognition of this truth, we shall win the struggle of free men against communism. This editorial discusses some of the hurdles that must be cleared.

To win the needed recognition that "our capitalistic society... is the truly revolutionary one," we must keep pounding away both abroad and at home. That is because the communists simultaneously attack us on an international front and try to undermine us from within.

The present drive to rearm ourselves and our allies is crucial to our self-protection on the international front. We must be prepared to meet the armed force of aggressive communism with armed force if we are to secure our physical freedom.

Arms are not enough

But to re-establish parity in arms is only half of the battle. In the last analysis it is not the more important half. To be effective, our arms must be backed by loyalty of men to our ideals. So, both abroad and at home, we must win men to the faith that we do have "the truly constructive, the truly revolutionary ideal."

On the international front, the effort to win adherence to such faith in our capitalist society meets tough going. That arises from the fact that in some of the countries that are allied with us in the fight against communism, capitalist society has offered to its people no such ideal. In varying degrees "the values of opportunity, competition, democracy, productivity" – those key aspects of American capitalism – are either absent or subordinated in their economic life. Indeed, the *Wall Street Journal* recently remarked that "to the European, capitalism has become synonymous with cartels – and with the disregard cartels foster for the consumer, the worker and the over-all well-being of the nation's economy."

No Simple Solution

Nonetheless, many European labor and governmental leaders sincerely believe that cartels are essential to their economic salvation. They believe that without such restrictions in congested European markets there would be intolerable cut-throat competition and instability of employment. Thus, when we point out that the cartel capitalism so prevalent in Europe lacks the constructive qualities of competitive American capitalism, we may offend European leaders whose wholehearted cooperation we need in the fight against communism.

(Continued on next page)

But, if we soft-pedal that contrast, we sacrifice the opportunity to win understanding and loyalty from millions of Europeans who have had no chance to learn that capitalism can be the constructive and liberalizing force that it is in the United States. Indeed, when many of these millions embrace socialism it is not because they love it. They are rather desperately seeking a tolerable middle course between what they consider the hateful extremes of communism and the undesirable aspects of capitalism as they understand it.

New name not the answer

We know that there is no easy way to handle the problems created by such misunderstanding of American capitalism. Neither do we share the belief that much of the difficulty would be overcome if we were to call American capitalism by some other name. By doing that, the argument runs, we shall relieve it from the unpleasant connotations that are attached to the word capitalism in some other parts of the world. But, after all, if we are to give up all the terms that have come to mean something else in other parts of the world, we must begin by ditching the term "democracy" which, in the official jargon of the Kremlin, seems to mean what we call dictatorship.

In spite of the difficulties, however, we must stick to this job of exporting the truth that our capitalist system does offer opportunity, competition and democracy. We must let the rest of the world see that it means a continuous drive for increased productivity, and the search for profits by increasing sales and consumption, not by trying to sell less for more.

Export alone not enough

The spreading of truth about American capitalism will not be effective if it is merely directed abroad. Unless it is carried on at home also, it will lack the driving faith that is essential to any convincing export of this type. Nor will export alone come to grips with the communist attack on our country from within—an attack that gets too much help from loyal Americans who short-sightedly repudiate the basic principles of our institutions in their efforts to reform some of their deficiencies. For success both at home and abroad, we must have right here at home a much more militant recognition that it is in fact our capitalist society which offers "the truly constructive, the truly revolutionary ideal."

Here at home, too, this raises difficult complications. Businessmen who are among the leaders and principal practitioners of capitalism, have generally been catalogued as conservatives. Hence, many people must stretch their imaginations a bit to see that businessmen are leaders of a development which has so greatly and so rapidly improved the lot of free men in America that it is truly revolutionary.

These difficulties of definition, however, are relatively superficial aspects of the problem of seeing our capitalist society clearly. The basic facts are that:

American capitalism is leading free men to an ever higher material standard of living while respecting their spiritual, social and political freedom.

Communism is leading its people back into a life of servile regimentation under dictatorship.

American capitalism advances to high ground never before attained by free men. Communism retreats to ground that men with an appetite for freedom throughout the ages have sought to escape. If we can establish this truth firmly, around the world, we shall no longer need to worry about communism. It will be hopelessly sunk.

McGraw-Hill Publishing Company, Inc.

ROCK RATED!

P&H MODEL 955-A

P&H MAGNETORQUE* is the electric swing that never wears out

Just what does Magnetorque mean to you in this great 2½ yd. shovel? Simply this: It eliminates the old swing frictions with their constant headaches and replacement costs. It gives you the smoothest, slickest swing you ever saw—15% to 25% faster than any other machine of its size—and Magnetorque will last the life of your machine.

Add to this the rugged, rock-rated construction of welded high tensile steels—the smooth hydraulic control—the greater stability and digging power—and you have the greater output which means greater profit. Better get all the facts about this outstanding machine—companion to the famous P&H 1055 (3½ yds.). Ask about the P&H 955-A today.

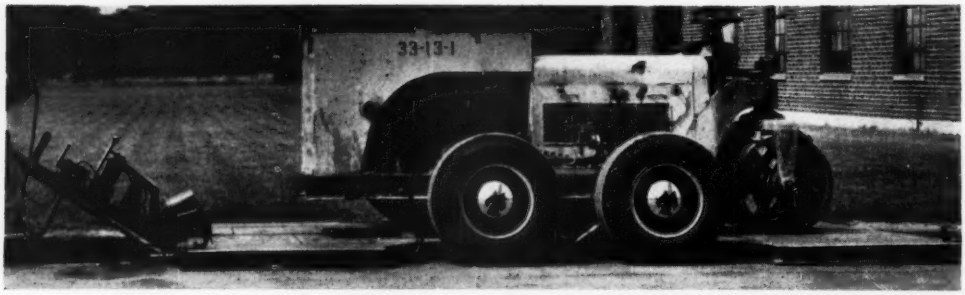
*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

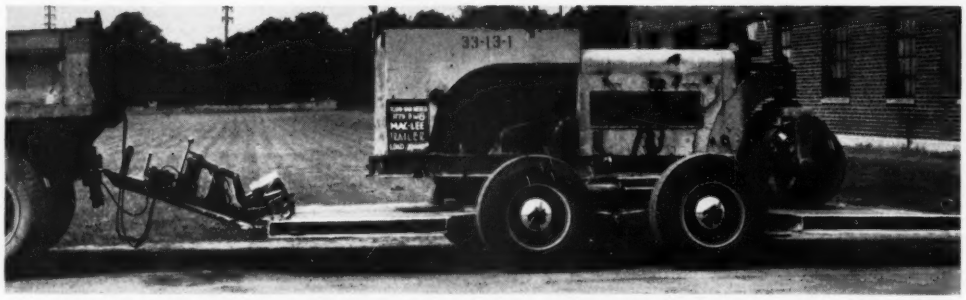
HARNISCHFEGER
CORPORATION
4494 W. NATIONAL AVENUE • MILWAUKEE 14, WISCONSIN

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FAB HOMES

CONSTRUCTION EQUIPMENT NEWS . . A Preview of

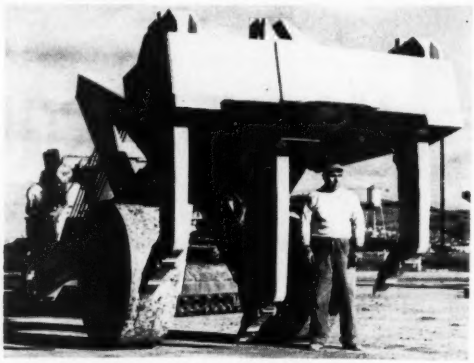
JAMES M. CONNOLLY, Equipment Editor





SOMETHING NEW IN EQUIPMENT TRAILER DESIGN You can forget all about cribbing, timbers and ramps that have always been a part of the accessories for transfer of construction equipment. With the new Mac-Lee trailer pictured here it's quicker and safer. The 5-in. deep bed rests on the ground where it's a simple matter to "walk" a machine aboard. Then powerful hydraulic cylinders lift both of them to any position up to 18½-in. clearance. Power for the hydraulic system is provided by an electric pump connected to the prime mover's electrical circuit. Mechanical locks hold the rig in up-position. For accessibility, the tongue attaches to either end of the trailer. Wheel-arm assemblies and the tongue may be quickly removed, coupled together and towed away for another job, leaving the bed and its load behind.—**Mac-Lee Trailer Co., Celina, Ohio.**

AMERICAN HOIST RE-ENTERS SHOVEL FIELD This new ¾-yd shovel, Model 375 BC, is also available with crane, dragline or pull-shovel front. Part of standard equipment is controlled boom lowering arrangement. The boom lowers against engine compression controlled by the operator at any desired speed. Combinations of ball-joint rod-end bearings and anti-friction bearings reduce pedal effort 60%.—**American Hoist & Derrick Co., St. Paul 1, Minn.**

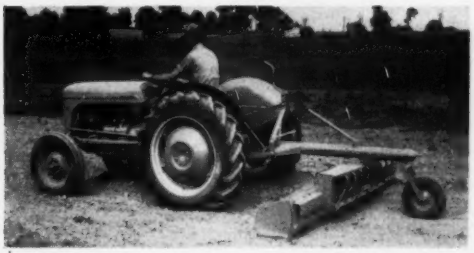


HEAVY-DUTY RIPPER JOINS "MONSTER" CLASS The huge center tooth alone on this monstrous ripper will take the combined pull of six tractors (180,000 lb), and the machine can rip any foliated or laminated material, such as shale or decomposed granite. Center tooth has three designed depths: 60, 48 and 36 in. Outer teeth have two: 48 and 36 in. It's expected to replace explosives for shattering material.—**Peterson Tractor & Equipment Co., San Leandro, Calif.**

New Machinery, Tools and Equipment That Will Help You on the Job

TRACTO-LIFT COMBINES TALENTS OF TWO RIGS
The lifting power of a fork-lift truck and the travel ability of a tractor are combined in this Tracto-Lift shown transferring two sections of snow-covered pipe in a contractor's storage yard. Available in four sizes with lifting capacities of 3, 4, 5 and 6,000 lb; fork lengths from 30 to 60 in., and lifting heights to 12 ft 6 in.—**Tracto-Lift Co., 2011 Baltimore, Kansas City 8, Mo.**

HEAVY-DUTY CAMEL-BACK BOOM FOR BACKHOE
The new camel-back boom shown here is standard equipment on all new Wayne Crane models.—**Wayne Crane Div., American Steel Dredge Co., Fort Wayne, Ind.**



MULTI-PURPOSE BLADE ALSO HAS SCARIFIERS
There's a full 14-in. moldboard height on this 6-ft blade which can be angled in multiples of 15 deg through a full 360 for either pulling or pushing operations. It can be offset for work close to buildings. Scraper blade is double-edged, and an offset pin allows the operator to cut a "V" ditch with small included angle.—**Harry Ferguson, Inc., 3639 E. Milwaukee Ave., Detroit 11, Mich.**

HYDRAULIC HOPTO DIGGER HAS WOOD GRAPPLE
Equipped with its newest attachment, a pulpwood grapple, the Hopto Digger can reach out 14 ft, pick up ¼ cord of 8-ft logs in a gulp, lift them 14 ft above ground level and swing through 180 deg in a 20-sec loading cycle. A power takeoff from the truck transmission actuates the Vickers system at 1,000 psi, and lifting capacity is 3,000 lb.—**Badger Machine Co., Winona, Minn.**

ELECTRIC 6-YD SHOVEL IS FULLY CONVERTIBLE
The lower boom section of this Bucyrus-Erie electric rig is rigidly connected to the A-frame with widespread boom feet to eliminate sway braces. The upper section is pin-connected to the lower and suspended from the A-frame with fixed-length bridge strands. The tubular dipper handle rotates in a rubber-cushioned saddle block to

(Continued on page 176)

MOBILITY *to the job!*

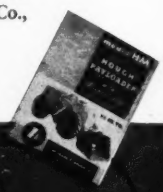
4-WHEEL DRIVE PAYLOADER®

The hundreds of Model HM "PAYLOADER" owners are real proof that this unusual tractor-shovel is a money-maker. Many owners are repeat buyers and some have fleets of six or more.

Why is the Model HM a money maker? First, it gets to the job *quickly* under its own power — over street, highway or ground — eliminates the time and expense of trailers. Second — it masters many different jobs — excavates, loads trucks, carries, bulldozes, grades, spreads, strips, backfills . . . acts as a mobile crane . . . is excellent for drawbar work and for many types of material handling. Third — it gives crawler-like traction on the job, yet works on pavements without damaging them — as well as on earth, sand, rock, mud or snow. Fourth — it maneuvers fast and easily — thanks to four speeds reverse as well as forward, plus power-booster steer. Fifth — double-acting rams raise and lower the booms, dump and close the bucket, exert tons of down-pressure for tough digging conditions.

See this big 1½ yd. "PAYLOADER" in action and you'll understand how it has sold itself to hundreds of contractors, large and small. See what it can do for you. The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Illinois.

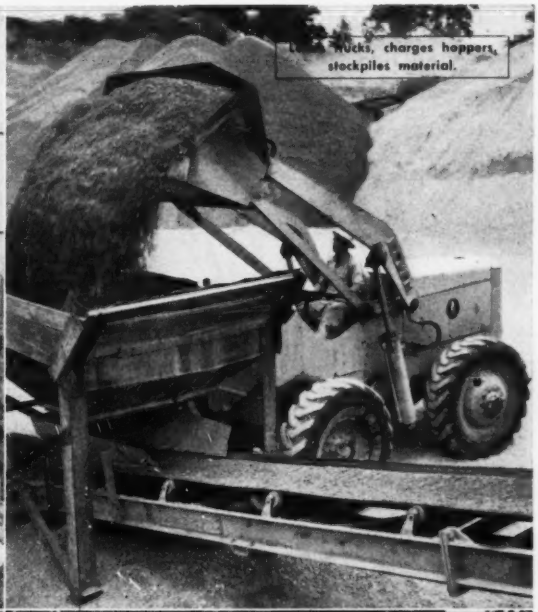
***Write** for full information on the 1½ yd. 4-wheel drive Model HM, the 1 yd. 4-wheel drive Model HR, or any of the five other "PAYLOADER" sizes down to 12 cu. ft. capacity. No obligation.*



PAYLOADER®

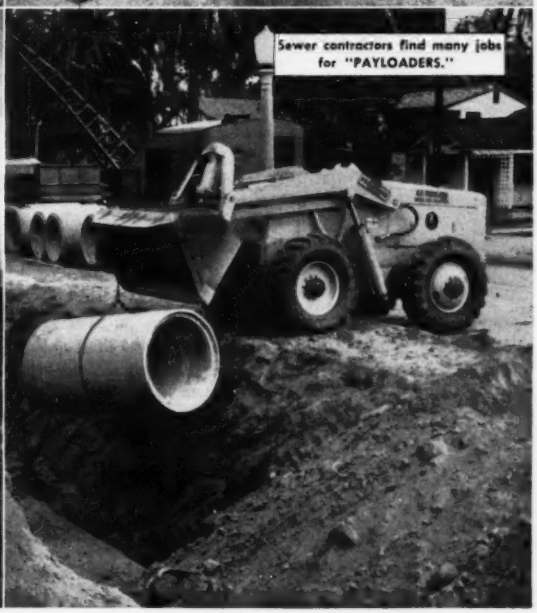
VERSATILITY *on the job!*

...ction and digging power ...r profitable excavating.



...ucks, charges hoppers, stockpiles material.

Bulldozer, crane hook and lift fork attachments available.



Sewer contractors find many jobs for "PAYLOADERS."

absorb shock loads during plugging of the swing. Single part, doubled hoist ropes are attached with an equalizing sheave to each side of the dipper. This exclusive B-E dual twin hoist automatically puts lifting power on the lip and teeth, as needed. Rapid change is provided between hoist and propel to facilitate quick move-ups and prompt travel away from dangerous faces, if required.—**Bucyrus-Erie Co., South Milwaukee, Wis.**

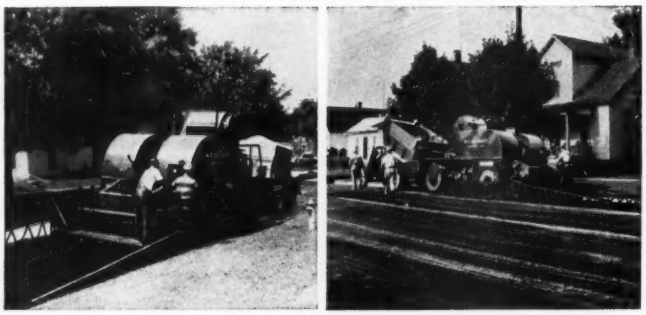
LEAK-PROOF JOINT—After a good deal of research and experiment, the Robinson Clay Product Co. introduces a new concept in ceramic pipe joints for industrial use in conveying liquids and gases. Known as "Screw-Seal", this intriguing joint combines plastic with vitrified clay to form a leak-proof and infiltration-proof connection. Robinson industrial clay pipe is manufactured with a threaded joint made of Plastisol, a rubber-like plastic. It is resistant to oxidizing atmospheres, corrosive acids and to most noxious gases, including hydrocarbons. Pipe and joint are available in 4-, 6-, and 8-in. internal diameters with standard fittings. Each clay pipe end is made dimensionally accurate in the application of the plastic, which is cast directly on the pipe with the outer surface molded to a tapered thread. This provides two male-threaded ends on the clay pipe

which becomes an integral part for all practical purposes. Pipe lengths are joined by a threaded, pressure-molded plastic collar. In assembling the joint, the plastic collar is threaded over the stationary pipe end, and the next section of pipe, is turned into the collar by hand. Three revolutions by hand, and a fourth and final turn with a strap wrench make the seal. When installing branches and additions to lines already in service, a split flange union can be used. This joint offers quick assembly when connections such as elbows, T's and Y's are required, or wherever space limitations prevent screwing of a full length of pipe into a collar. In this instance a band is placed over the threads to assure a smooth surface for the collar. When the bolt on each side of the collar is tightened, the Plastisol is compressed into a tight joint. Screw-Seal has unusual flexibility; it can be deflected as much as 6 deg without leakage. In all three sizes it can withstand backloads of 2,000 lb per lin ft, and its coefficient of expansion is extremely low.—**The Robinson Clay Product Co., Akron 9, Ohio**

BIN-LEVEL INDICATOR—No diaphragms, false signals, intricate parts, or tricky adjustments with this new positive automatic indicator for bin levels. The Convair Bin-Vue bin level indicator consists of a 1/2000-hp motor turning at 5 rpm, and is connected to a shaft by a torsion spring, alongside of which is placed a limit switch. At the end of the shaft is a 4-blade paddle which is free to turn as long as material does not touch it. Once touched by material, however, the paddle stops and the motor keeps on turning until a spring, by torsion, actuates the limit switch which, in turn, kicks out the motor and actuates any other desired equipment. The spring is kept under torsion until the material at the paddle falls away; then the paddle turns the spring away from the limit switch and again starts up the motor. Open or closed positions on the limit switch maintains any desired electrical combination. For hazardous conditions the indicator can be supplied in an explosion-proof model. — **Convair Corp., Pittsburgh, Pa.**

Moto-Paver

Cuts Resurfacing Time-and Costs



Makes old roads and streets look-and ride-like new!

Moto-Paver does the complete mixing and laying job on resurfacing work—in one continuous operation. Speeds the job—cuts the cost. Produces a smooth, waveless surface even on rough, irregular pavement. Makes old roads and streets look—and ride—like new. Gives a uniform mix using beach sand, gravel, crushed stone or slag aggregates, and various bituminous materials including tars, cut-back asphalts, road oils or emulsions. Road speeds up to 25 mph. make possible quick moves from job to job.

Standard and heavy duty models for all types of resurfacing, retread and stabilization jobs under all kinds of operating conditions. See your local H & B distributor or write for Bulletin MP 49.

H&B ESTABLISHED 1887

HETHERINGTON & BERNER INC.

Engineers • Manufacturers

735 Kentucky Avenue Indianapolis 7, Indiana

THE MAN SAID:

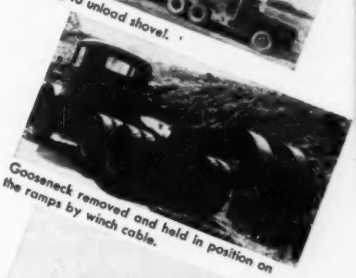
90-ton power shovel loaded on a Talbert Trailer (gooseneck removed) for transportation within an Illinois strip coal mine.

"90 tons is one mighty big load...

...and we hauled it on a TALBERT removable gooseneck* trailer!"

The extra strength built into all Talbert Trailers permitted this 90-ton load to be hauled thirty miles over rough mine roads with a maximum of ease and efficiency. Talbert Removable Gooseneck Trailers are adaptable to many specialized hauling jobs—find out how Talbert Trailers can work for you!

Preparing to unload shovel.

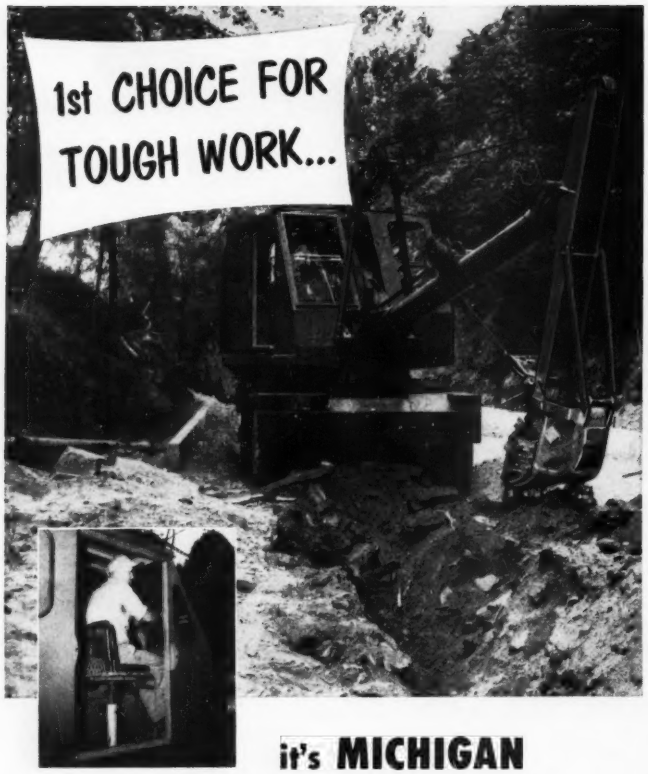


Gooseneck removed and held in position on the ramps by winch cable.

Unloading 90-ton power shovel from Talbert Trailer with ease from a height of ten inches.

THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY



Operator Ernest Duff likes MICHIGAN'S air controls and the accessibility of engine and clutches.

it's MICHIGAN exclusively for James Armour Excavating Co.

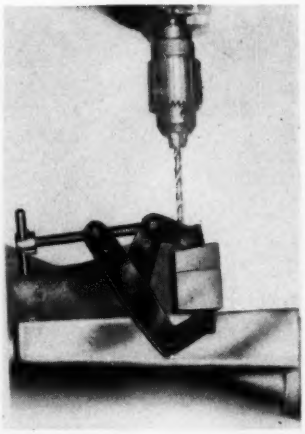
Owner of eight MICHIGAN Excavator-Cranes, this Philadelphia contractor is for MICHIGANS 100%. Why? His first MICHIGAN convinced him that they have what it takes.

In a housing project, a MICHIGAN Truck Hoe removed and re-laid 1,000 feet of 6-inch water line at a lower depth to accomodate a new street grade. The MICHIGAN trenched down to hard rock. The rock was then blasted and the MICHIGAN completed the trench and re-laid the water line, finishing the entire job well within schedule. Says owner Jim Armour: "We can handle these jobs at lowest cost with a MICHIGAN."

Whether or not your work is in rock . . . next time you need an excavator-crane . . . investigate MICHIGAN ⅜-yd. and ½-yd. excavator-cranes . . . your *best* buy!

MICHIGAN POWER SHOVEL COMPANY

495 Second Street, Benton Harbor, Michigan, U.S.A.

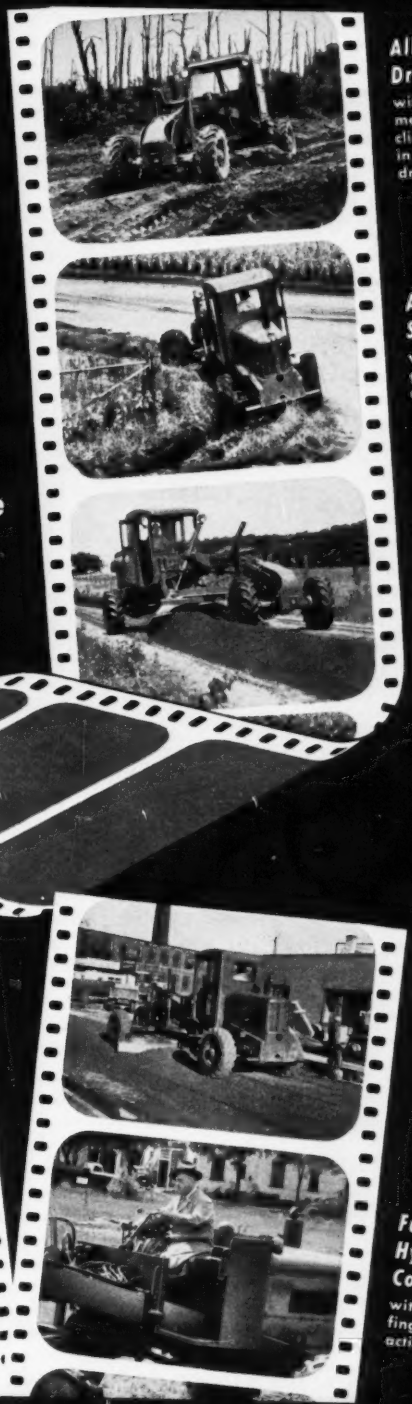


NEW CLAMPING PRINCIPLE—Maker introduces a principle in clamping which combines the best features and strength of a standard drop-forged "C" clamp and a toolmaker's parallel clamp. A ball-bearing trunnion eliminates distorting, twisting action. It also absorbs vibration, insuring a firm, steady grip throughout any operation. There is no unsupported screw or loose pad to "walk off" the center when pressure is applied against the anvil. Three different gripping faces are built into the clamp to accommodate all types of holding jobs. This single clamp is suited ideally for rough welding, general assembly, fast production or delicate tool and die work. It is available in five different sizes: 1½, 3, 6, 9 and 12 in.—**Centinela Industrial Supply Co., 11930 Inglewood Ave., Hawthorne, Calif.**

SYNTHETIC RUBBER POWDER—Development of an entirely new synthetic rubber powder for use in costruction was announced recently by the Goodyear Tire & Rubber Co. It is a finely divided, free-flowing powder developed in cooperation with the Berry Asphalt Co. of Magnolia, Ark., a major producer of asphalt road-building materials. As a free-flowing powder, the rubber is easy to handle and mixes freely with asphalt, unlike other types of rubber which display resistance to rapid dispersion. Test installations placed in the Middle West are being studied by research technicians of both companies, as well as by highway construction engineers. Independent testing laboratory reports show that from 1.5 to 2% of this rubber added to an asphalt mix is as effective as a 5% conventional rubber-asphalt mixture in resisting the stripping action of water and frost. It also shows considerable promise as a filler in composition siding, shingles and the like.—**Goodyear Tire & Rubber Ave., Hawthorne, Calif.**

8 Important Features Never Before Combined in a Motor Grader

30 minutes of action, in 16 mm. color and sound, demonstrating the performance of Austin-Western Power Graders and Attachments on a wide variety of jobs. Your nearby A-W distributor will be glad to schedule a print for your use.



All-Wheel Drive with its tremendous climbing power in the front drivers.

All-Wheel Steer which makes the grader twice as maneuverable.

Controlled Traction which moves more material, farther and faster.

Precision Sideshift which keeps the blade under perfect control.

High-Lift Blade for accurate work on any degree of slope.

Extreme Blade Reach which comes in handy on the majority of jobs.

Completely Reversible Blade for those rare occasions when it is necessary.

Full Hydraulic Control with its instant, fingertip action.

AUSTIN-WESTERN COMPANY · *Subsidiary of Baldwin-Lima-Hamilton Corporation* · **AURORA, ILLINOIS, U.S.A.**

BALDWIN BLH LIMA-HAMILTON

Carlon* (kar'lon)
n. a new flexible lightweight, corrosion-proof plastic pipe having widely diversified applications. Extruded from specially compounded plastics.
*Reg. Trade Mark

Pipe for the future with CARLON

CARLON plastic pipe . . . outstanding development of modern science . . . combines the inherent advantages of plastic with the desirable characteristics of metallic pipe. Guaranteed against rot, rust and electrolytic corrosion, it has a trouble-free service life many times longer than ordinary pipe. It is light in weight (⅛ as much as steel) and can be installed easily.

Field testing has proven CARLON plastic pipe superior for drinking water lines, sludge removal, drainage and irrigation systems, ventilating and cooling lines, hydraulic sluicing, concrete-encased conduit, and intake and exhaust piping.

Supplied in long, easy-to-handle lengths, CARLON plastic pipe requires a minimum number of connections. A full line of plastic fittings is available to join lengths of CARLON or to connect this new piping medium with previously installed metallic systems.

Specify the Pipe with the Stripe!

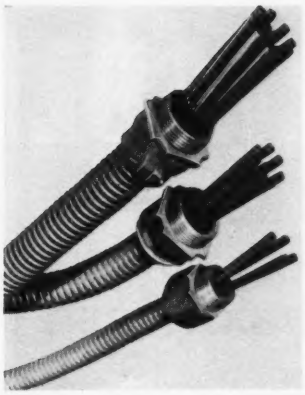
WRITE TODAY FOR CATALOG

381 CP

CARLON PRODUCTS CORPORATION

IN CANADA: MICRO PLASTICS, LTD., ACTON, ONTARIO

10300 MEECH AVENUE • CLEVELAND 5, OHIO



ARMORTUBE CABLE—The Armortube cables pictured here not only resemble BX electrical cable, but also can be installed and relocated almost as easily as BX. Instead of wiring, however, they contain 4, 8 or 12 pneumatic or hydraulic tubes. They have been designed to cut installation time and costs, protect instrument and control connecting lines, conserve space and improve plant appearance. Tubes are made of aluminum or copper and are capable of transmitting hydraulic control pressures as high as 3,000 psi and all ranges of pneumatic control pressures. Connections and take-offs may be made in standard electrical junction boxes, eliminating support racks. Standard pipe or conduit clips may be used for fastening to walls or ceilings, and a tracer tube easily identifies corresponding tube ends between cable connecting points, since all tubes in a bundle maintain the same position relationship. Armortube cable is a product of the **Bailey Meter Co., 1022 Ivanhoe Rd., Cleveland 10, Ohio.**

GERMAN-PRODUCED PITCH — A new and special pitch called Synoplast has been developed in Germany and utilized in building construction. Synoplast has a plasticity range (difference between breaking point after erosion and melting point, Kraemer-Sarnow test) of 65 deg or more. A greater stability is thus represented at higher temperatures, with no embrittlement at low temperatures. It can be utilized also as adhesive matter for steep board roofs; it can be used for jointings and as protective agents for various purposes. By adding appropriate filling compounds, which do not impair its processing qualities, plasticity and stability have been further enhanced. Such filled material is called Synoplast F and is utilized for all purposes requiring a particularly high stability, such as the insulating of steel and cast iron pipes and submerged containers.—**VfT (Association for the Utilization of Tar), Essen, Germany.**

The real proving ground for "SUBWAY" is on your toughest rock drilling jobs, where hose is constantly subjected to pulling, twisting and dragging over rough, abrasive surfaces. You wonder how *any* hose can survive the punishment so *long!*

The red rubber cover hits a new high in wear- and weather - resistance. The high quality wrapped duck carcass has extra strength and stamina. The oilproof tube is a long-lasting black rubber compound. Minimum weight and extreme flexibility assure easy handling.

"SUBWAY" will, of course, serve with equal efficiency and economy in pavement breaking and any other heavy duty air tool work. Available in sizes ½" to 1¼", I.D., in maximum lengths of 50 feet.

Contact Our Nearest Branch for Details and Prices.

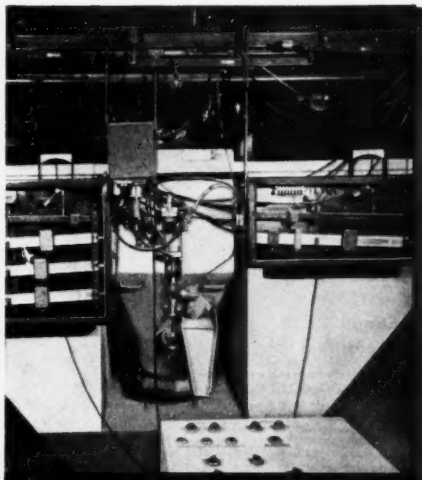
GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia · New York · Boston · Pittsburgh · Chicago · Detroit · St. Paul · Los Angeles
San Francisco · Seattle · Portland · Salt Lake City · Denver · Houston · Distributors in Other Principal Cities

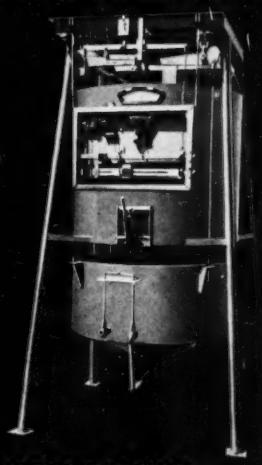
Est. 1870

All welded... PORTABLE
HERE is a profitable way to reduce haul distance of mixed concrete. Portability of this Johnson Transit-Mix Plant with its all-welded units is the lowest cost answer. Portable-section Tandem Bin minimizes field bolting . . . dismantling and erecting takes less than half the time required for moving a bolted plant. All sections are easy-handling width . . . 11′ or under . . . yet, bins have big storage capacities. 7 sizes range from 55 to 210 cu. yds., can be arranged for 2, 3 or 4 aggregates. Central cement compartment holds 61 to 185 bbls. In addition to quick portability and big capacity, also check flexibility of this Tandem Bin Transit-Mix Plant. See your Johnson distributor, or write us, for more facts.
C. S. JOHNSON CO. CHAMPAIGN, ILL. (Koehring Subsidiary)
CJ101
KOEHRING PRODUCT
Mix Plants
BINS • BATCHERS • SILOS • ELEVATORS • CHARGERS • HOPPERS • CLAMSHELL, CONCRETE BUCKETS



Automatic, air ram operated CONCENTRIC BATCHER

This exclusive Johnson Concentric Aggregate-Cement Batcher, with central cement feed is fully automatic, air ram operated. Finger-tip panel (shown in foreground) controls air rams on aggregate and cement fill valves and discharge . . . assures extreme accuracy at top batching speeds for most efficient use of materials. Batcher also can be furnished with manual controls. Aggregates arranged concentrically around cement prevents "gumming". Cement is weighed on separate scale; aggregates are weighed on individual beam scales . . . or on accumulative dial scale.



WATER BATCHER
improves concrete quality

Here's another handy auxiliary unit that can help increase your mix plant efficiency — Johnson Water Weigh-Batcher. Capacities: 120 gallons or 1,000 lbs. for batches up to 2 yards . . . and 240 gallons or 2,000 lbs. for batches up to 5 yards. Semi- and full-automatic types. They're fast-weighing . . . batching accuracy is not effected by changes in water temperatures.

With 30 digging feeds, 221 Trenchliner excavates 6½ in. to 13¾ ft. per min. It digs 16 to 36 in. wide, 8½ ft. deep, cuts within 10 in. of side obstructions. Equipped with easy-in, easy-out "Tap-In" teeth. Has full reverse of all operations . . . undercuts, makes vertical set-ins. 1-min., power-shift conveyor dumps spoil on either side. Check all Parsons wheel and ladder-type models, full crawler mounted, also rubber-tired utility Trenchliner.

PARSONS *(Koehring Subsidiary)*
Newton, Iowa

Moto-Bug has instant gravity dump with snub-line control . . . no body hoist mechanisms. This 10 cu. ft. power wheelbarrow also has full power forward and reverse . . . no push, no pull necessary to travel, back, or spot. Climbs 20% ramps fully loaded. Has interchangeable 1500-lb. flatbed, 500 or 1000-lb. fork lift, also scraper blade. Other Kwik-Mix units: 3½-S to 16-S Dandie® concrete mixers, bituminous and plaster-mortar mixers.

KWIK-MIX *(Koehring Subsidiary)*
Port Washington, Wis.

Fast-shuttling Koehring Dumptor® eliminates slow turns at loader, on narrow haul roads, and at the dumping location. With constant-mesh transmission, Dumptor travels same speeds forward and reverse . . . gets its load, drives to fill, dumps and returns to loading unit without turning. Eliminating only 2 turns saves ½ minute on every cycle. Instant gravity dump cuts another 15 to 25 seconds off haul cycles with heavy-duty Dumptors.

KOEHRING COMPANY
Milwaukee 16, Wis.

X66

Where only the best is a bargain!

On a really tough hauling job, a truck's either got it, or it hasn't.

You either make money or you lose it. Only the *best* truck engineered for the job is a bargain for the operator.

That's why you see so many Internationals on tough jobs. That's why you'll be money ahead to see your International Truck Dealer or Branch and get the *best* truck engineered for your job. Why not make it *soon?*

INTERNATIONAL HARVESTER COMPANY · CHICAGO

Get the facts about International's features:

- All-truck engines—exclusively for truck work—built in the world's largest truck engine plant.
- The "roomiest, most comfortable cab on the road"—the Comfo-Vision Cab designed by drivers for drivers.
- Super-steering system—more positive control, easier handling and 37° turning angle.
- Traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- 115 basic models . . . everything from ½-ton pickups to 90,000 lbs. GVW off-highway models.
- America's largest exclusive truck service organization.

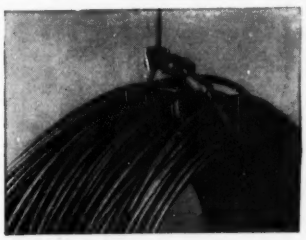
International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

INTERNATIONAL TRUCKS

"Standard of the Highway"

Model LF-210, 157-in. wheelbase, 8-yard dump body, 37,000 lbs. GVW

HAND-SIZE CALCULATOR—Men who work with figures and formulae, who struggle with comptometers and slide rules to extract square roots, percentages and unit prices will be interested in the Curta calculator, a new portable type which fits snugly in one hand, carries to five decimal places and totals to 99 billion. Figures can be checked and rechecked on three different sets of dials. Weighing only 8 oz, the Curta will do as much as electric desk calculators costing hundreds of dollars. **—Curta Calculator Co., 5543 S. Ashland Ave., Chicago, Ill.**

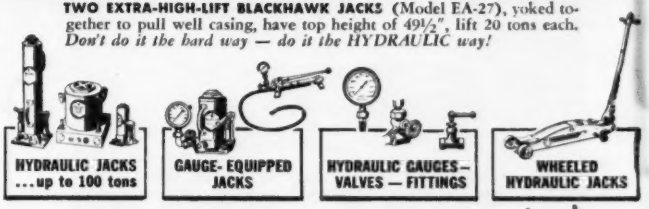


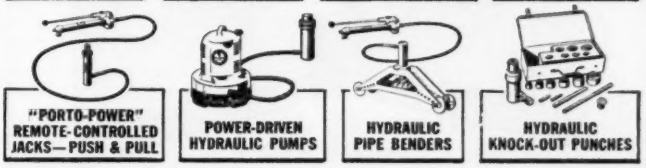
CHOKER SLING FITTING—New design perfected by Electroline, well-known manufacturer of wire rope products, employs two overlapping and co-acting hooks which are easily applied to a wire rope to form a loop of any desired size. (see picture). The rope cannot be freed from the sling until both hooks are disengaged manually, thus preventing accidental release. Another design feature is that the hooks are joined to the fitting portion of the choker sling fitting by a pivot which allows the unit to conform automatically to the size of the load. No matter what the diameter of a load, within capacity limits, these pivoted hooks change their relative positions to that of the fitting and thereby the fitting and cable both maintain a straight line, when under load. They also can be furnished with a simple locking device which prevents the rope from slipping through the hook. **—Electroline Co., 4121 S. La Salle St., Chicago 9, Ill.**

Pick the right jack for the job

...from the world's most complete line of hydraulic equipment

TWO EXTRA-HIGH-LIFT BLACKHAWK JACKS (Model EA-27), yoked together to pull well casing, have top height of 49½", lift 20 tons each. *Don't do it the hard way — do it the HYDRAULIC way!*





YOU GET ALL THESE HYDRAULIC TOOLS ONLY FROM BLACKHAWK

BLACKHAWK

Save buying time when you need hydraulic equipment. Specify Blackhawk—and be sure you'll get the hydraulic tool that will match your requirements exactly. Order from leading supply houses. Write for free catalogs. Products of Blackhawk Mfg. Co., Dept. J-2342, Milwaukee 1, Wisconsin.

WELLMAN *Williams Type*

MORE YARDAGE PER DAY

● Elimination of excess materials and careful weight distribution permit rapid, rhythmic operation of Wellman Dragline Buckets. Operators can cover a wider digging radius with this streamlined bucket.

Built of special alloy steel, using strong welded design, Wellman buckets provide strength and stamina for long-term economy. Perforated designs also available. You'll do better with Wellman.

Want Facts?

Write for free descriptive bulletins.

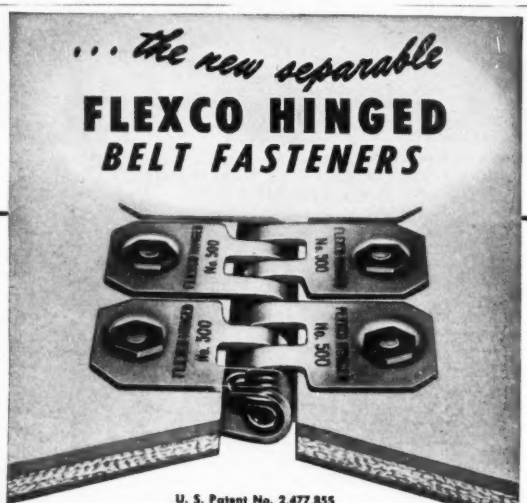
THE WELLMAN ENGINEERING COMPANY

7000 Central Avenue • Cleveland 4, Ohio

DRAGLINE, CLAMSHELL, CUSTOM-BUILT BUCKETS • STONE AND WOOD GRABS

. . . the new separable

FLEXCO HINGED *BELT FASTENERS*



U. S. Patent No. 2,477,855

- For joining grader, trencher, ditcher and other earth moving conveyor belts.
- For belts 3/16" to 1/2" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

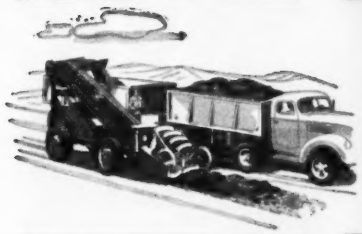
Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO. 4699 Lexington St., Chicago 44, Ill.

TUNGSTEN CARBIDE BITS—Here is a complete line of tungsten carbide bits, known as Brunner & Lay Rok-Bits. They are designed for use with drill steels on wagon drills, jackhammers, stopers and drifters. The tungsten carbide cutting edges are of the hardest materials known, can drill quickly and remain sharp to a degree far superior to standard steel-edge bits. They are supplied in standard sizes from 1¼ to 4 in. and to meet all requirements. Further, they are offered in the four-point cross type and in the two-point chisel type. Shoulders of the bit are formed accurately for full support by the drill-steel shoulder, to maintain alignment and to transmit impact directly to the steel without strain on the thread.—**Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill.**

SAFETY CONNECTING LINKS—The photo here shows Wedglok safety connecting links, disassembled (top) and assembled. Tensile strength of the Wedglok links exceeds published strength of comparable alloy chain. The spacer is in compression when the link is carrying a load, and it will not shear or loosen if the projecting spacer points are peened properly. With just two sizes of links, connections can be made for a very broad range of chain sizes. Equally efficient for permanent connections or for quick emergency repairs, they can be assembled anywhere without special equipment.—**Interstate Drop Forge Co., Milwaukee, Wis.**

BOGIE WHEELS AND ROLLERS—A complete line of Sterling bogie wheels for crawler-type tractors is now available, fully equipped with Timken bearings and featuring positive seals for exclusion of all foreign matter. The manufacturer claims that they need not be lubricated until after 1,500 hr of continuous operation, and their permanent locking devices assure perfect bearing adjustment at all times. Easily dismantled whenever necessary, the Sterling rollers are independent of one another, resulting in less friction on crawlers.—**Sterling Steel Casting Co., P. O. Box 230, E. St. Louis, Ill.**



Announcing

THE NEW ATHEY FORCE-FEED

HiLoader

Clamshells, front-end loaders, conveyor-type bucket loaders, crawler mounted rigs — they're all outmoded on stockpile or windrow loading since the introduction of the new Athey HiLoader.

HERE'S WHY THE ATHEY HiLoader IS BETTER

HI-CAPACITY
10 yds. per min.

HI-FLEXIBILITY
Loads from any stockpile or windrow.

HI-MOBILITY
20 MPH

HI-LOADING
12' 10" Discharge Height

HI-SAVINGS
One Operator, Lower Maintenance

HI-COMFORT
Operators like it. They sit or stand and drive it like their automobile.

The New Athey HiLoader will boost your production, cut your costs and give you more savings. Designed for more efficient and faster loading from stockpile or windrow, the HiLoader is the result of four years of research, engineering and testing. It is a "field proved" machine backed by performance on scores of tough jobs in a variety of industries. See it in action. Prove to yourself this is your best answer to lower your increasing costs. See how the auger feeder, the discharge conveyor that can be swung 45° left or right, short wheelbase, cleated main conveyor, full-floating underslung paddle-blade feeder, large tires and simple controls all add up to the most practical loader in the field today.

For more complete information on this sensational machine, wire, phone or write:

ATHEY PRODUCTS CORPORATION
5631 West 65th Street, Chicago 38, Illinois

or see your Athey-"Caterpillar" distributor.

Athey **FORCE-FEED HiLoader**

HOW TO HANDLE WET JOBS

#4 of a Series

FAIRCHILD ENGINE & AIRCRAFT BLDG.

Islip, Long Island, N. Y.

Sub. Contr.: Washington Conc. Corp.

Gen. Contr.: John W. Harris

WATER LOWERED 11 FT AT RATE OF ONE FT PER HOUR

ANYONE WHO HAS tackled a wet job in extremely coarse sand and gravel knows what torrents of water drain through such pervious soil. Yet 11 hours was all it took for the Griffin Wellpoint system shown in photo to give a bone-dry subgrade. Excavation of the 20,000 sq ft area then proceeded rapidly by tractor-scraper.

Upon the recommendation of Alman, Fordice & Handy, architects, the wellpoint system was maintained in operation until danger of flotation was eliminated by construction.

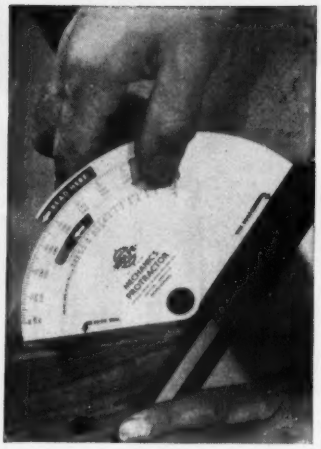
• Footnote: drainage of surrounding area caused 4 ft drop in static level of a well 400 ft away. Got a "big dry"? Specify Griffin.

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax



MECHANIC'S PROTRACTOR—A handy mechanic's protractor designed for on-the-job measuring of angles is made of durable Vinylite plastic rigid sheet. Engineers, carpenters and construction men use this protractor, as well as inspectors, sheet metal workers, and pipe layout men. It gives three readings at one setting: outside angle, adjacent inside angle, and inches-per-foot pitch. Merely spread with the edges squarely against sides of an obtuse joint, as shown in the photo. The angle of bend or deflection is read at the top, while the obtuse angle is read simultaneously on the bottom row. The pitch is indicated by a second arrow on the inmost scale which reads up to 24 in. per ft. A straightedge may be used to extend one side of the angle whenever needed. Easily cleaned, it is resistant to water, oil, grease and most chemicals.—**Interstate Sales Co., 123 E. 18th St., New York 3, N. Y.**

IMPROVED FASTENER—Previous to the development of Tru-Set fasteners, the drive pin and threaded stud-type fasteners were held in the breech of Ramset tools by a thin flange, which was sheared off when gas pressure developed to a maximum. Now these fasteners, with no flange at all, are inserted in the breech plug right under the powder load. An elasticized tip at the point end of the Tru-Set fastener completes the seal and also prevents the fastener from being tilted while in the barrel of the tool. Tru-Set gives great penetration from the same amount of power, automatic cleaning of tool barrels, higher quality and more effective fastenings, and greater power control. The new models also eliminate one step in the operating cycle —which establishes a practical standard of approximately 20 sec for the complete operating cycle of Ramset tools.—**Ramset Fasteners, Inc., 12117 Berea Rd., Cleveland, Ohio.**

Newest AND MOST MODERN ASPHALT PLANT IN AMERICA

• UNIT BUILT

• 8 sizes—500 to 6,000 lb. batch capacities

• Fully automatic or manual weighing

From California to New Jersey the new Standard Asphalt Plant is being hailed as the last word in modern design. Rugged and dependable, yet unequaled for economy, speed and flexibility. No other plant has so many advanced, profit-building features. Prompt delivery. Write TODAY for full descriptive catalog.

STANDARD

STANDARD STEEL CORPORATION

5089 Boyle Ave., Los Angeles 58
123-89 Newbury St., Boston 16

HOW TO CUT THE COSTS OF SOIL COMPACTING

Send for our bulletins describing the Vibro-Plus Terrapac Soil Compactor. The Terrapac combines great compacting ability, deep penetration, excellent maneuverability—with light weight and low cost. They'll save time and money in operation and maintenance. They'll help you show a profit on jobs, when other equipment can't.

VIBRO-PLUS PRODUCTS, INC.

54-11 Queens Blvd., Woodside, L. I.

Republic Rubber
CHAMPION AIR HOSE

more capable power carriers speed excavation work

You're familiar with the situation pictured above. Loose earth shoveled away while shot hole drilling proceeds. Then the blast. Then more shoveling, more drilling until the entire excavation is completed.

But do you realize that this entire operation depends upon one item?

Republic Rubber Champion Air Hose delivers the power that moves the air drill that feeds the shovel. One breakdown and the whole business grinds to a halt.

On jobs like this, you profit by using the very best air hose available. That's Republic's Champion, a tough, yellow-covered work horse especially made for outdoor service. Easy to handle, easy to see, safe to use, Champion Air Hose is available through your local Republic Rubber Distributor in all standard sizes in lengths up to and including 50 feet.

Make sure your working schedule is protected through use of Republic Champion Air Hose on all jobs involving abrasion, falling rock, extreme weather conditions or workers using sharp pointed tools.

And see your Republic Distributor for a cost-saving analysis before you buy any product of industrial rubber. Remember, if it's made of rubber, Republic builds it better!!

INDUSTRIAL RUBBER PRODUCTS BY
REPUBLIC RUBBER DIVISION
Lee Rubber & Tire Corporation
YOUNGSTOWN, OHIO

for REACH and SPEED —the paver for any pouring job

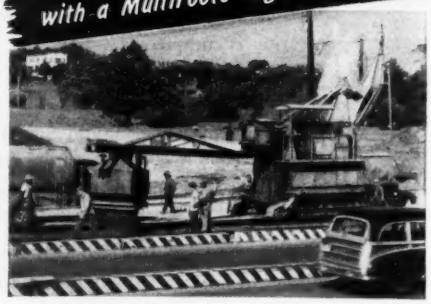
LOOK at the picture above—one machine that can place itself in any location—no expense for purchase or operation of a hoisting mechanism—no extra cost for truck equipment—minimum operating crew! Here is pouring at low cost.

MultiFoote brings you the greatest combination for mixing and pouring concrete you can find anywhere. One unit with the MultiFoote HighLift Boom permits you to mix and pour three stories up and then by simply lowering the boom or with a simple change in booms where extra long HighLift Booms have been used, you are equipped for pouring slab at a speed that has seldom been equalled.

MultiFoote Pavers have established records for pouring slab at the rate of a mile a day. With the MultiFoote you are ready to bid on a wide range of contracts and three sizes of MultiFoote Pavers from a 27-E Single Drum to the big 34-E DuoMix care for practically any capacity problem. Ask for details.

THE FOOTE COMPANY, INC.
Subsidiary of Blaw-Knox Co.
1910 State Street Nunda, New York

FREE YOUR CRANE for other Work with a MultiFoote HighLift Boom



MultiFoote 34-E DuoMix getting out 50 batches an hour even with difficult traffic conditions impeding trucks.

MULTIFOOTE PAVER

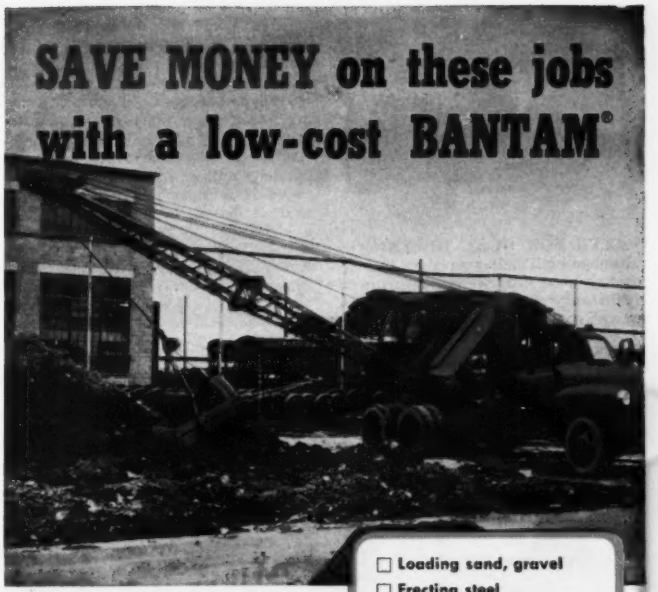
FOR EVERY PLACE CONCRETE MUST BE POURED

A BLAW-KNOX PRODUCT — FROM FORMS TO PAVER TO FINISHER ALL YOUR PAVING EQUIPMENT IS ON THE PAVEMENT FROM BLAW-KNOX

LONG-HOLE DRILLING TOOLS—Here is a complete set of tools for use with standard percussion-type rock drills for drilling long holes varying in depth from 20 to 150 ft. Components include: Tru-Seal shank, adapters, couplings, extension rods, and Rok-Bit tungsten carbide bits. Recommendations include drilling grout holes, test holes, sub-level bench stoping holes or blast holes of standard diameters (1⅞ and 3 in.). Such holes can be drilled in any type of rock or ore and in any direction by following a recommended procedure. Couplings and adapters are designed to be self-cooling and self-cleaning. The tool's design keeps all holes in alignment and greatly minimizes vibration and maximum depth.—**Rock Bit Sales & Service Co., 2514 E. Cumberland St., Philadelphia 25, Pa.**

RUNWAY SURFACE SEAL—One of the problems besetting airfield designers and maintenance contractors alike is the softening of runways and taxi strips by jet fuel spillage. They can now be protected with a coating of plasticized synthetic rubber and tar blend, called Surfa-Aero Sealz. Test strips have been installed at Hunter Air Force Base, Savannah, Ga., on a 900-ft section of runway and on a taxi strip. Jet planes use a kerosene-type fuel which, when spilled on asphaltic cement pavements, has a dissolving effect. Spillage usually occurs on parking stands, taxi strips, and on the initial 500 ft of runway just before takeoff. The new rubber-tar blend is unaffected by searing jet blasts which range in temperatures from approximately 160 to 300 deg F and higher. The product is shipped to construction sites in drums, tank cars or tank trucks, where it is mixed with aggregate by the regular hot-mix plant procedure. A coating of 1 to 1½ in. is applied to asphaltic cement pavements.—**Naugatuck Chemical Div., U. S. Rubber Co., Rockefeller Center, New York 20, N. Y.**

SAVE MONEY on these jobs with a low-cost BANTAM®



Why go to the expense of moving in big equipment, or special work crews, when hundreds of jobs like those listed at the right can now be handled faster, more economically with a job-proved Bantam. *Costs only a fraction of the price of bigger machines* . . . mounts on new or used truck for high-speed mobility . . . has 8 fast-change attachments, with big work capacity, for profitable year 'round operation. Ideal for scattered assignments or crowded locations, where bigger, heavier machines can't go. Write for literature. Schield Bantam Co., 221 Park St., Waverly, Iowa, U. S. A.

- ☐ Loading sand, gravel
- ☐ Erecting steel
- ☐ Pouring concrete
- ☐ Handling pipe, timbers
- ☐ Digging foundations and footings
- ☐ Driving piling
- ☐ Trenching for pipelines
- ☐ Stockpiling materials
- ☐ Digging and cleaning ditches
- ☐ Excavating small pits
- ☐ Building access roads
- ☐ Removing overburden
- ☐ Repairing slides, washouts
- ☐ Feeding portable crushing plants
- ☐ Misc. clearing and grading

Bantam crane lifts 5 tons, handles ½ cu. yd. concrete bucket, 1400 to 2400# pile driver. Booms up to 50'.

Back hoe digs 100' of 5' trench per hr. Depths to 14'. Fast-change adaptors for hoisting and backfilling.

Shovel or dragline loads up to 90 cu. yds. of material per hr. Drives anywhere... goes right to work.

SCHIELD BANTAM

Cranes • Excavators

Get more jobs done at less cost

VALVE FOR DUAL HOSES—Any plumber will tell you that the ordinary hose bibs were not made to withstand constant pressures. The new Symmons Duplex Protector is a valve specifically designed for use with dual hoses. A flick of the finger completely shuts out both hot and cold water by means of a single, small lever-type handle. On a setup providing water to a plaster or concrete mixer, for instance, pressures may readily be removed from hoses in between mixing operations. The new valve is actually two valves in one unit. It inserts in a double line (or a hot and cold supply line) at the take-off between the hoses and the lines themselves. Available with male union connections to take standard threaded ½-in. I. P. S. fittings or with ½-in. sweat union ell connections complete with wall support, they prevent dripping and completely remove all pressure from both hoses when machines are idle. Off and on positions are indicated clearly.—**Symmons Engineering Co., Boston, Mass.**

A FEW HOURS CONVINCED HIM...

Less than half a day's experience with his first APSCO Base Paver satisfied an eastern contractor that this machine was all that was claimed for it . . . and more.

So he immediately ordered another!

It's that type of experience that has made the APSCO Base Paver a favorite with so many road builders. Laying up to 160 tons per hour under normal conditions, its oscillating leveling screed, depth, banking and crown controls produce accurate, economical results.

Although currently unable to make immediate delivery, we shall be glad to discuss your requirements with you and tell you more about the savings and other advantages of Apsco equipment. ***Please write.***

ALL PURPOSE SPREADER CO. Myrtle, Ohio U.S.A.

PREFABRICATED DOOR UNITS—Building and housing contractors can forget about mortising, spacing, matching of locks and strikers, and a host of other problems which automatically come with installation of wooden doors. The Hasko "ready hung" door and frame can be installed in half the time needed for ordinary installations. Higher quality workmanship is a natural result of the mass production methods and precision machinery that allows factory craftsmen to cut, shape, mitre, join and assemble the unit with so much more ease and facility than the on-the-job carpenter with his hand tools. Units are adjustable for wall thicknesses from 4¼ to 5½ in. and come in all standard door sizes. All hardware is attached, with the exception of knobs.—**Haskelite Mfg. Corp., Grand Rapids, Mich.**

BULK MATERIAL ATTACHMENT—A bulk material attachment, easily installed in 90 sec, converts any BRIK-TOTER into an excellent conveyor for sand, gravel and other bulk materials. The hopper and side guards prevent spillage and overloading of the portable masonry materials conveyor. The manufacturer states that excavation cost surveys show that one man with this unit can excavate at a far faster rate than three men by manual methods. In many cases the upper end of the BRIK-TOTER may be placed directly over a truck, eliminating a second lift from ground level.—**Mar Rail Conveyor Co., Pawtucket, R. I.**

Straight-from-the-shoulder facts show you save in every way with

CHEVROLET *Advance-Design* TRUCKS

FACT No. 1

COSTS LESS TO BUY

Match a Chevrolet truck against any comparable truck capable of handling the same payloads. You'll find Chevrolet trucks *list for less*, yet bring you ruggedness, stamina and great features not found in the other truck.

FACT No. 2

SAVES MONEY ON THE JOB

Experienced truck operators know Chevrolet trucks cost least to own and maintain. Valve-in-Head economy, in the Chevrolet Loadmaster or Thriftmaster engines, saves on gas. Four-way engine lubrication reduces wear and oil costs. Rugged construction means long life.

FACT No. 3

RIGHT TRUCK FOR EVERY LOAD

Chevrolet trucks are *factory-matched* to your payload and service requirements. You don't buy "too much truck" or "too little truck." Frame, axles, springs, body, brakes and power are *balanced* for the job.

FACT No. 4

KEEPS ITS VALUE LONGER

Records show that Chevrolet trucks traditionally bring more money at resale or trade-in than many other makes. Chevrolet's market value stays up because the value stays *in!* More proof that Chevrolet is the best truck buy! See your Chevrolet dealer soon.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

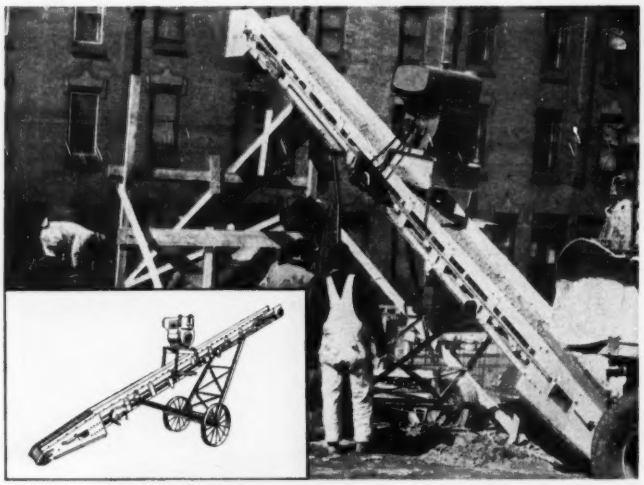
TWO GREAT VALVE-IN-HEAD ENGINES—Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBURETOR—for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH—for easy-action engagement • SYNCHRO-MESH TRANSMISSION—for fast, smooth shifting • HYPOID REAR AXLE—for dependability and long life • TORQUE-ACTION BRAKES—on light-duty models • PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—on medium-duty models • TWIN-ACTION REAR BRAKES—on heavy-duty models • DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-duty models • CAB SEAT—with double-deck springs for complete riding comfort • VENTI-PANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGNED BODIES—for greater load protection • ADVANCE-DESIGN STYLING—for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN

One in a series of factual reports from owners of Farquhar Conveyors

FARQUHAR CONVEYOR SAVES $125 A WEEK ON CONSTRUCTION JOB*

*at M & L Construction Company, Philadelphia, Pa.



THIS Farquhar Conveyor, used by the M & L Construction Co., unloads 6½ cubic yards of wet concrete in 10 minutes, direct to forms. On one job alone, it saved the labor of two or three men—saving $125 a week, and quickly defraying the Conveyor's initial low cost of $1200. In addition, costly runways, scaffolding, buggies and wheelbarrows were eliminated!

Whether you move coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut *your* handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent and permanent conveyors will solve your handling problem. Our engineers will be glad to consult with you . . . at no obligation!

Farquhar CONVEYORS SAVE YOU MONEY

WRITE for complete information to A. B. FARQUHAR CO., Conveyor Div., Dept. A-26, 142 N. Duke St., York, Pa. or 618 W. Elm St., Chicago 10, Ill.

WORLD'S MOST COMPLETE CONVEYOR LINE

HYDRAULIC PRESSES • FARM EQUIPMENT • FOOD PROCESSING AND SPECIAL MACHINERY

ELECTRIC GLUING UNIT—After several years of study by its engineers, architects and chemists, the U. S. Plywood Corp. has endorsed a portable, high-frequency electric gluing unit that "spot-welds" plywood wall panels in place within a matter of minutes. The welding method completely eliminates use of exposed surface nails and causes glue to set almost instantaneously. Employing the conventional system of erecting plywood paneling, nails or small brads are used to hold the panel temporarily in place while the glue sets. Using the high-frequency, electric gluing unit, the spot welds take the place of nails while glue in intervening areas sets naturally. Recommendations call for a weld wherever a nail or brad customarily would be used. An alternative method is to nail plywood sheathing to studs and spot-weld the ¼-in. hardwood plywood to this sheathing. By using this method the entire back of the hardwood plywood is coated with glue, and the high-frequency unit is used to apply the welds, again wherever a nail or brad ordinarily would be required. Conventional plastic resin glues are used. The electrical units operate off 110-v current.—**U. S. Plywood Corp., 55 W. 44th St., New York 36, N. Y.**

WHERE TO BUY

STOP that WATER

WITH FORMULA NO. 640. A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

Haynes Products Co., Omaha, Neb.

UNI-FORMS... "TOPS" in CONCRETE FORMING

A STEP IN THE RIGHT DIRECTION

Save TIME, MATERIAL, LABOR—form your concrete with UNI-FORMS—the world's fastest, most versatile concrete forming system.

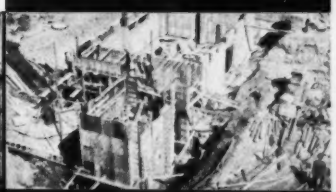
UNI-FORMS are standard forming equipment with the industry's leading contractors. More than 15,000,000 sq. ft. now in use. Investigate UNI-FORMS today. Watch them work—there's a UNI-FORM job near you now. Write for the UNI-FORM catalog and complete details.

UNI-FORMS FORM ANYTHING!

Bridges, Overpasses, Culverts

Concrete Houses, Apartment Buildings

Sewage Disposal Systems, Water Treatment Plants



Heavy Industrial Structures

Universal FORM CLAMP CO.

Concrete Form Specialists Since 1912

General Offices and Factory • 1236-38 NORTH KOSTNER • CHICAGO 51, ILLINOIS • CAPITOL 7-1600

Branch Offices and Warehouses:

- SAN LEANDRO, CAL., 2051-9 Williams St.
- HOUSTON, TEXAS, 2314 Preston Ave
- EUCLID, OHIO, 24901 Lakeland Blvd.
- NEW YORK, N. Y., 51 E. 42nd St.
- BALTIMORE, MD., 661 S. Monroe St.
- SWAMPSCOTT, MASS., 51 Barnstable St.
- HATO REY, PUERTO RICO, Ave. Munoz Rivera 84—Stop 27½

Service Wherever You Build...Coast-to-Coast

TALC MINED IN NEW YORK IS GROUND SO FINE YOU CAN'T EVEN SEE IT

Aerial view shows the surface buildings of the Gouverneur Talc Co. near Balmat, N. Y. The mine headframe is at the left; at the far right are the milling plant and silos for storing ore and ground talc.

A talc particle of 0.8 micron diameter would have to be enlarged 55 times before it would be visible to the average eye! That's the kind of superfine talc they grind at the plant of Gouverneur Talc Company, Inc., near Balmat, N. Y., in the heart of the Empire State's talc-mining district.

Besides conventional grinding mills for talc of medium to large particle size, there are fluid-energy mills for the superfine sizes. The grinding energy is supplied by heated compressed air at high velocities which agitates the talc particles so furiously that they are broken down into the desired small sizes by being bombarded against each other at terrific speeds.

In operation since 1948, this producer, a subsidiary of R. T. Vanderbilt Co., of New York, has become a leading source of talc for use in paint, ceramics, cosmetics, paper, and many other products. Present output is about 200 tons daily. Using a modified room-and-pillar method, rooms are mined out from the dipping veins so that enough ore is left to serve as pillars for supporting the roof. The mine workings include a 600-ft vertical shaft, lined with concrete and having three compartments. Main operating levels are at depths of 300 and 500 ft.

Both jackhammer and stoper drills are used in production and development work, holes being bored 6 to 8 ft deep. Like so many mining men, they rely principally on Bethlehem Hollow Drill Steel. About 1200 ft per day is drilled, using both conventional detachable bits and carbide-tipped bits. Rods are reconditioned in the mine's own blacksmith shop.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

A jackhammer breaks up large chunks of talc so that they will fall through the grizzly and into a loading pocket underneath. The hoist near the drill operator is used to scrape ore to the grizzly.

This miner is drilling into the talc orebody with a jackhammer supported by a "Jackleg." Using Bethlehem hollow drill steel and detachable bits, blast holes are put in 6 to 8 ft deep.

BETHLEHEM HOLLOW DRILL STEEL

BETHLEHEM STEEL

FOR BLACKTOP

BLACKTOP CONTRACTORS!

INVESTIGATE THE PROFIT POSSIBILITIES OF SUPER SEAL!

Hundreds of contractors testify to the extra profits they make by SUPER SEALing every job. SUPER SEAL is inexpensive and easy to apply—yet it effectively seals out the elements, solvents, salts, etc.—at the same time adding smoothness and beauty.

Colors Available for Added Distinction Write Dept. A for full information and samples.

TROYER DRIVEWAY SERVICE
Seal-coat Pioneers — Engineers and Distributors
2157 S. Park Ave. Buffalo 20, N. Y.

HOW TO ESTIMATE CONSTRUCTION COSTS

A guide to sound bids

SAMPLE CHAPTERS
—Estimating in General
—Handling and Transporting
—Excavation
—Concrete
—Masonry
—Roofing and Flashing
—Lathing and Plastering
—Plumbing
—Overhead and Profit
—Complete Estimates
—Approximate Estimates

Revised 2nd Edition
By H. E. Pulver
Civil and Structural Engineer
653 pages, scores of tables,
$7.50

A reliable working guide that covers every element to be considered in bidding for a construction job. It includes step-by-step procedures for computing accurate estimates on concrete work, steel, electrical installation . . . any kind of construction you're apt to meet in modern building plans. Practical examples of estimates worked out in detail demonstrate how to apply the methods outlined.

10 DAYS' FREE EXAMINATION

McGraw-Hill Book Co., Inc., 330 W. 42 St., NYC 36
Send me Pulver's CONSTRUCTION ESTIMATES AND COSTS for 10 days' examination on approval. In 10 days I will remit $7.50 plus a few cents for delivery, or return the book postpaid. (We pay for delivery if you remit with this coupon; same return privilege.)
(Print)
Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position CM-4-52
This offer applies to U.S. only

NEW EQUIPMENT BRIEFS

Anderson Bros. Mfg. Co., 1907 Kishwaukee St., Rockford, Ill., has developed a **hand scraper** for flat surfaces. Constructed of seamless tubing which makes it light in weight with just the right flexibility, the Model No. 5 uses replaceable blades 1 3/32 in. wide by 1/16 in. thick. Scraper lengths are 22, 20 and 18 in. It is also available with carboloy-tipped blades as optional equipment.

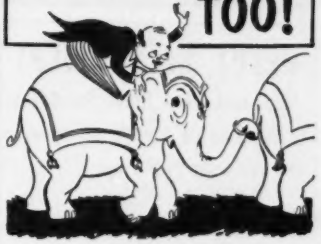
A new **drafting machine,** called the baby VEMCO Model 33, is a small edition of the Standard VEMCO drafting machine made by **V. & E. Mfg. Co.,** 758 S. Fair Oaks Ave., Pasadena 20, Calif. With a 16-in. arm length, it is equipped with a vernier reading to 10 min. It has aluminum brackets and steel band covers, a full circle base line setting and a protractor brace. No indexing mechanism is provided, and all angles, including the 15-deg positions, are set by the protractor brake in the same manner as the angles between the 15-deg positions of the standard drafting machine.

Blackhawk Mfg. Co., in Milwaukee is making a **tension wrench** that flashes a light when the proper torque has been applied. The 50-lb capacity wrench is equipped with a tension scale with readings calibrated in all standard units. Special applications—installing sparkplugs, regulating automatic transmissions and for similar automotive mechanical functions.

A standard **filling-bleeding tank** for use in servicing hydraulic lines is announced and now being manufactured by **Superdraulic Corp.,** 14256 Wyoming Ave., Detroit 4, Mich. The unit holds 2½ gal of oil and is readily adaptable for use with all types of hydraulic systems in automotive, aircraft and other equipment. Includes filler cap, air-inlet valve, pressure gage, relief valve, automatic shut-off valve within the tank, dispensing hose and control valve.

A comfortable **chest-mounted face-shield,** designed by the Research Laboratories of **Mine Safety Appliances Co.,** Pittsburgh 8, Pa., is supported by easily adjusted neck and chest straps which provide balanced weight distribution. A soft, pliable leather pad rests on the chest without pressure or binding. Improved vision, elimination of dead-air-space, and relief from binding discomforts are just a few of the advantages attributed to this protective assembly. The standard model is supplied with a clear Chipruf visor. Other visors available are the Chempruf for chemical splashes, and a metal screen visor for hot operations.

LE-HI Makes a Good Connection TOO!



Specify LE-HI for all Hose Couplings!

Wherever hose is used there is a LE-HI hose coupling to match—from small tubing to large industrial applications.... The complete LE-HI line includes:

- Air Tool Couplings
- Welding Hose Couplings
- Steam Hose Couplings
- Fire Hose Couplings
- Acid Hose Couplings
- Sand and Blower Hose Couplings

SERIES 100

SERIES 600

- Drilling Hose Couplings
- Oil and Gas Hose Couplings
- Agricultural Hose Couplings

. . . plus complete lines of hose clamps, air valves and manifolds.

Sold through leading distributors and rubber manufacturers only.

"Old Doc" says: "Write now for your free copy of the complete LE-HI catalog"

HOSE ACCESSORIES COMPANY
1700 Lehigh Ave.
Philadelphia, Pa.

LE-HI Makes a Good Connection!

LE-HI
HIGH and LOW PRESSURE
HOSE COUPLINGS
TRADEMARK REGISTERED

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: "OPPORTUNITIES" EQUIPMENT: USED OR RESALE

HELP! HELP! HELP!

New and Used Parts for Sale!

CATERPILLAR PARTS all types!

POWER UNIT PARTS for:

Murphy — Climax
Waukesha — Case

SHOVEL PARTS for:

Lima 1201 — Koehring
P & H — Hanson
Lorain — Bucyrus
Northwest — Trackson Loader

TRUCK PARTS for:

Chevrolet — Dodge
Ford — Mack

MISCELLANEOUS PARTS

Air compressor—Drill Parts—Ingersoll Rand—Chicago Pneumatic — Gardner-Denver — Cleveland—Sullivan—Timken Drill bits & steel—Ty-Rock Vibrating Screen Parts—Anti-Friction Bearings—V-Belts of many lengths & sizes—Belt lacing, sprocket & sheaves—Roller chains, screen cloth—Manganese grates, hammers, liners for Williams & Dixie mills.

MANY PARTS NEW! ALL USABLE!

Liberal discount

20% to 75% of list price!

Direct Inquiries to G. R. Smith,

CONCRETE MATERIALS & CONSTRUCTION CO.

Box #790, or Telephone 4-0201 in Cedar Rapids, Iowa.

Will send an itemized list.

DESIGNER

Are you qualified to be a CHIEF DESIGN ENGINEER?

Chemical Plant
Southern California
Supervise Design Section
Age 35 to 45
Excellent Salary, Secure Future

This new job will be a challenge to the right man. Please supply full information on experience and background by letter to

P3616, Construction Methods & Equipment
1111 Wilshire Blvd., Los Angeles 17, Calif.

ENGINEERS & FOREMEN

Superintendents and Project Managers are in greater demand than ever before.

LEARN IN SPARE TIME — AT HOME

Get the practical "Know-How" . . . detail by detail from elementary material to the complex techniques of organization and management as developed and used by large successful contractors.

Learn all about Contracts & Sub-Contracts, Job Organization, Departmental Organization, Planning, Production, Tools & Equipment, Estimating, Cost Systems, Purchasing, Clerical Systems, Field Systems, Safety, Inspection and Industrial Relations.

Send post card today for complete outline and Free Trial Lesson.

GEO. E. DEATHERAGE & SON, INC.

Registered Professional Engineers

5 E. PRESTON STREET
BALTIMORE MARYLAND

"BUILDING CONSTRUCTION COST DATA"

1952 (10th) Edition

A 105-page booklet of tabulated construction costs revised as of January 1952. 1600 average spot prices, alphabetically arranged and broken down for labor and material, plus 112 explanatory paragraphs, Concise, Comprehensive, Up-to-date. Handy $2.75 Postpaid.

R. S. MEANS **P.O. BOX 36M** **DUXBURY, MASS.**

Priced Right For Sale — QUARRY EQUIPMENT

Consisting of:

Shovels — Screens — Drilling Equipment — Generators — Conveyors
Trucks — Power Units — Crushers — Electric Motors — Miscellaneous Equipment

Located at Cedar Rapids, Iowa. Inquiries should be directed to:

G. R. SMITH P. O. BOX 790, OR PHONE NO. 4-0201 IN CEDAR RAPIDS, IOWA

FOR SALE

2—Steam Locomotives Yard Type 0-4-0

1—Turbo-Generator Set 250 V. 400A-DC

1—Steam Turbine 100 HP, 860 RPM, 175 Lbs.

1—Centrifugal Pump with 7½ HP, 440 V, 3 Phase Motor, 200 G.P.M., 90' Head

NEW—Jack Bits #2 for 1¼" Drill Steel

DUKE POWER CO.
CHARLOTTE, N. C.

STURDEVANT 16-FOOT
AIR SEPARATOR

Complete With Motor

In good condition and priced right.
Inquiries should be directed to:

G. R. SMITH
P. O. Box 790, or Phone No. 4-0210
In Cedar Rapids, Iowa

EMPLOYMENT . . . EQUIPMENT . . . BUSINESS

OPPORTUNITIES

Whatever your need— think "SEARCHLIGHT" FIRST

Advertisers in this Issue

A McGRAW-HILL PUBLICATION

ABP ABC

Member of Associated Business Publications and Audit Bureau of Circulations

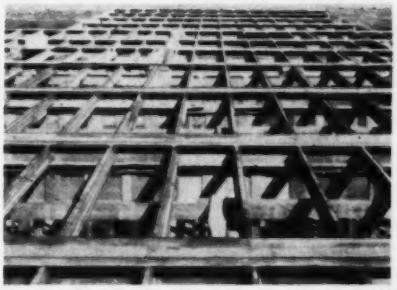
Acker Drill Co. 106
Acrow, Inc. 30, 31
Air Reduction Sales Co. 102
Alemite Div., Stewart-Warner Corp. 168
All Purpose Spreader Co. 192
Allis-Chalmers 124, 125
Alloy Rods Co. 34
American Cable Div., American Chain & Cable Co. 27
American Hoist & Derrick Co. 41, 158
American Manganese Steel Div., American Brake Shoe Co. 12
American Steel & Wire Div., United States Steel Corp. 78, 79
Athey Products Corp. 187
Atlas Powder Co. 37
Austin-Western Co. 179
Barber-Greene Co. 98
Barco Manufacturing Co. 151
Bay City Shovels, Inc. 138
Bethlehem Steel Co. 42, 196
Blackhawk Mfg. Co. 185
Blaw-Knox Div., Blaw-Knox Co. 70, 71
Boston Woven Hose & Rubber Co. 201
Briggs & Stratton Corp. 108
Buch Mfg. Co. 158
Bucyrus-Erie Co. 144, 145
Bullard Co., E. D. 4
Butler Bin Co. 77
Carlon Products Corp. 180
Carver Pump Co. 20
Caterpillar Tractor Co. 17
Chain Belt Co. (Construction Machy. Div.) 141
Chevrolet Div., General Motors 193
Cities Service Oil Co. 83
Cleaver-Brooks Co. 84
Cleveland Trencher Co., The 114
Clipper Manufacturing Co. 23
Construction Machinery Cos. 152
Crucible Steel Co. of America 113
Cummins Engine Co. 161
Detroit Diesel Engine Div., General Motors 33
Diamond Chain Co., Inc. 39
Dixon Valve & Coupling Co. 6
Dodge Div., Chrysler Corp. 92
Electric Tamper & Equipment Co. 69
Etnyre & Co., E. D. 8
Euclid Road Machinery Co. 91
Fairfield Engineering Co. 74
Farquhar Co., A. B. 194
Firestone Tire & Rubber Co., The 75
Flexible Steel Lacing Co. 186
Foote Co., Inc., The 190
Ford Motor Co. (Ford Div.) 105
Foundation Equipment Corp. 131
Funk Aircraft Co. 164
Gar Wood Industries, Inc., (Findlay Division) 116, 117
Gardner-Denver Co. 155
Gateway Erectors, Inc. 199
GMC Truck & Coach Div., General Motors 43
Goodall Rubber Co., Inc. 181
Goodrich Co., The B. F. (Truck Tire Div.) 1
Goodyear Tire & Rubber Co. 48
Gradall Div., Warner & Swasey Co., Inc. 35
Griffin Wellpoint Co. 188
Harnischfeger Corp. 153, 171
Hartford Fire Insurance Co. Hartford Accident & Indemnity Co. 99
Haynes Products Co. 194
Heltzel Steel Form & Iron Co., The 150
Hercules Powder Co. 147
Hetherington & Berner, Inc. 176
Hewitt-Robins, Inc. 140
Homelite Corp. 162
Hose Accessories Co. 197
Hough Co., Frank G. 174, 175
Independent Pneumatic Tool Co. 95
Inland Steel Corp. ..... 2nd Cover
International Harvester Co., Inc. (Industrial Power Div.) 132, 133
(Motor Truck Div.) 184
Iowa Mfg. Co. 136, 137
Irvington Form & Tank Corp. 86
Jackson Vibrators, Inc. 69
Jaeger Machine Co. 24, 25
Jahn Trailer Div., Pressed Steel Car Co., Inc. 128
Johnson Co., The C. S. 182, 183

(Continued on page 200)

RENTAL AND ERECTION SERVICE BY *Gateway*

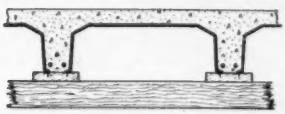
CONCRETE JOIST FORMS

Concrete Joist Floors are vermin-proof — low cost — light weight — and have a high fireproof rating. Concrete Metal Forms have been standardized by the Department of Commerce, Division of Simplified Practices Recommendation R. 87-32. Quick design and check tables to assist architects and engineers are available from the Concrete Reinforcing Steel Institute, 38 South Dearborn Street, Chicago, Illinois.

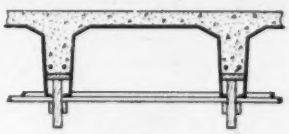


Gateway stocks Forms in many localities for quick service. All standard sizes in 20" and 30" widths, as well as special new Forms for exposed ceiling construction, are available. Complete installation service with or without centering. Contractors are invited to take advantage of Gateway's 20 years' experience in solving field construction problems.

Gateway offers two types of Metal Pan Systems to contractors: The Nailed-Down System and the Gateway "Slip-In" System. A complete manual of erection details is available by contacting the nearest Gateway office. Centering erection is a "Gateway" specialty. 100,000,000 sq. ft. of Form Area installed, is Gateway's guarantee of service, reliability and responsibility.



Gateway Nail Down System



Gateway Slip-In System

Gateway Erectors, Inc.

3233 West Grand Ave. Chicago 51, Ill. NEvada 2-1100

GATEWAY ENGINEERING CO.
CHICAGO 51, ILLINOIS
3233 W. Grand Avenue

GATEWAY ENGINEERING CO. of Md.
BALTIMORE 18, MARYLAND
2003 Lovegrove Avenue

GATEWAY COMPANY of Ohio
CINCINNATI 25, OHIO
2836 Colerain Avenue

Complete stock of forms in many locations

● Fits on the frame of any truck, 1½ tons or larger!

● Hydraulic power swings and lifts boom!

PITMAN

HYDRA-LIFT

low cost hydraulic truck crane!

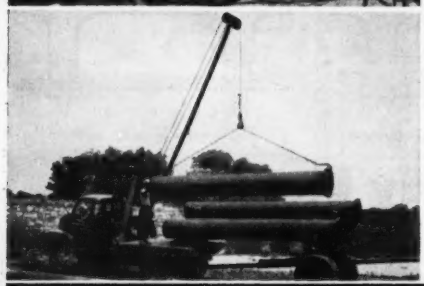
● Lifts up to 6,400 pounds!

● Boom telescopes from 12 to 17 to 22 feet!

● Requires only 40 inches behind the truck cab!

● Truck moves from job to job at normal truck speed!

Hydra-Lift slashes costs on dozens of lifting and hauling jobs. On the market for just one year, it's already been put to work cutting costs and saving time by scores of pipe, paving, sewer, general and building contractors, gas and water companies, transfer companies, mines, refineries and others all over the country. Write today for full information on the new, economical Hydra-Lift!



PITMAN MANUFACTURING COMPANY

300 West 79th Terrace — Kansas City, Missouri

Advertisers Index

(Continued from page 198)

Koehring Company 183
Kohler Co. 94
Kwik-Mix Co. 183
Laclede Steel Co. 76
LaCrosse Trailer Corp. 146
Laughlin Co., The Thomas 154
Lauson Co., The 68
Leschen & Sons Rope Co., A. 100
LeTourneau, Inc., R. G. 156, 157
Lincoln Electric Co., The 46
Link-Belt Speeder Corp. 16
Lone Star Cement Corp. 5
McGraw-Hill Book Co., The 197
Macwhyte Company 67
Madesco Tackle Block Co. 148
Mall Tool Co. 106
Malsbary Mfg. Co. 148
Manitowoc Engineering Works 26
Mar-Rail Conveyor Co. 94
Marion Metal Products Co. 45
Marlow Pumps 101
Marvel-Schebler Products Div., Borg-Warner 152
Master Builders Co. ..... 3rd Cover
Maxon Construction Company (Dumperete Div.) 103
Michigan Power Shovel Co. 178
Mine Safety Appliances Co. 107
Mixermobile Mfrs. 163
Moretrench Corp. 110
Morse-Starrett Products Co. 131
Nordberg Mfg. Co. 129
Northwest Engineering Co. 7
Oliver Corp. (Industrial Div.) 2, 3
Onan & Sons, Inc., D. W. 127
Owen Bucket Co. 134
Pacific Car & Foundry Co. 97
Paris Mfg. Co. 86
Parsons Co. 183
Pitman Manufacturing Co. 200
Remington Arms Co., Inc. (Industrial Sales Div.) 28, 29
Republic Rubber Div., Lee Rubber & Tire Co. 189
Richmond Screw Anchor Co., Inc. 165
Rockwell Mfg. Co. (Delta Power Tool Div.) 14, 15
Roebling's Sons Co., John A. 109
Rogers Brothers Corp. 139
Rosco Mfg. Co. 96
Salem Tool Co., The 135
Schield Bantam Co. 191
Schramm, Inc. 72
Seaman Motors, Inc. 122
Six-Wheels Inc. Div., Insley Corp. 10
Skilsaw, Inc. 32
Smith Co., The T. L. 38
Standard Dry Wall Products 130
Standard Oil Co. (Indiana) 40
Standard Steel Corp. 188
Standard Steel Works 111
Stang Corp., John W. 112
Sterling Wheelbarrow Co. 164
Stoody Co. 87
Stow Mfg. Co. 143
Talbert Construction Equip. Co. 177
Templeton, Kenly & Co. 160
Texas Company 18, 19
Thermoid Co. 149
Thew Shovel Co., The 21
Thurman Machine Co. (Scale Div.) 126
Timken Roller Bearing Co. ..... 4th Cover
Trackson Co. 167
Traylor Engrg. & Mfg. Co. 36
Troyer Driveway Service 197
Unit Crane & Shovel Corp. 166
Universal Engrg. Corp. Div., Pettibone Mulliken Corp. 121
Universal Form Clamp Co. 195
Vibro-Plus Products, Inc. 188
Vulcan Iron Works 115
Warner & Swasey Co., The 35
Wayne Crane Div., American Steel Dredge Co., Inc. 143
Wellman Engineering Co., The 186
Westinghouse Electric Corp. (Welding Div.) 159
White Co., David 104
White Mfg. Co. 158
White Motor Co. 22
Whiteman Mfg. Co. 13
Wico Electric Co. 142
Wooldridge Mfg. Co. 11
Worthington Pump & Machinery Corp. (Construction Machy. Div.) 9, 112

■

SEARCHLIGHT SECTION

(Classified Advertising)

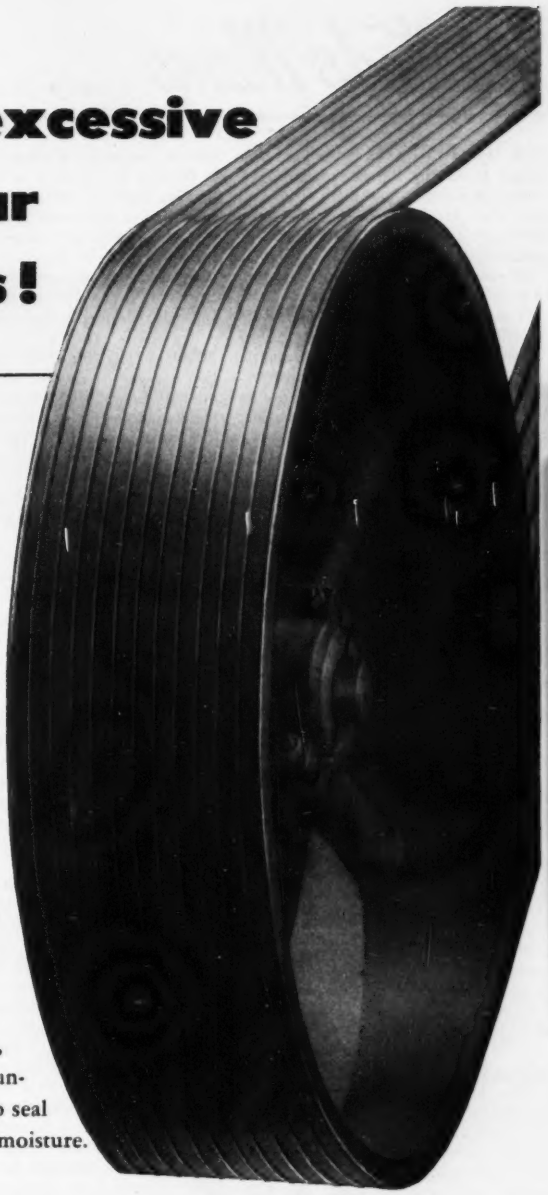
H. E. Hilty, Manager

Employment
Positions Vacant 198

Educational
Books 198
Schools 198

Equipment
(Used or Surplus New)
For Sale 198

How to beat excessive Cover Wear on V-Belts!



1 *Check sheaves for worn grooves*

2 *Check alignment between sheaves*

3 *Check tightness of sheaves on shafts*

(Sheaves must be tight on shafts to hold proper alignment. Worn grooves result in uneven side wall wear or running on bottom corners of belts, causing premature failure.)

4 ***INSTALL BULL DOG V-BELTS*** . . . their wear-resistant, durable covers of closely woven, heavy, bias-cut fabric can take brutal punishment where belt meets sheave — also seal against penetration of dirt, grease and moisture.

Get the complete Bull Dog V-Belt quality story on covers, cords and compounds from your BWH distributor — soon.

BWH
DEPENDABLE RUGGEDNESS

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Warehouse Stock: 111 N. Canal St., Chicago, Illinois **Distributors in all Principal Cities**

PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.

Methods Memo . . .

ONE MILLION UNITS is the total produced so far by the manufacturer of more construction machinery than anyone else in the business. We must hasten to state, though, that each piece made is only 1/16 the size of regular construction equipment which it duplicates.

You guessed it: The producer is the Charles William Doepke Mfg. Co., of Rossmoyne, Ohio, maker of accurate scale models in steel of big construction equipment. The millionth toy—a Heiliner scraper — rolled off the model line last month.

WANNA BUILD A BRIDGE? You shudda done it 25 years ago; bridges came much cheaper then. This is not news. But a graphic illustration of the increase in costs for heavy construction was provided recently by Louis C. Duclos, head bridge designer for the Louisiana State Highway Department, in a talk before the winter meeting of the American Society of Civil Engineers at New Orleans last month.

Here are some interesting cost items he presented:

	1927	1951
Open excavation, per yd	$ 2.00	$ 3.70
Concrete above caisson, per yd	17.00	50.00
Concrete in caisson, per yd	10.00	60.00
Reinforcing steel, per lb	.05	.17
Structural steel, per lb	.15	.50

A VETERAN ARMY CRUSHER is reported back in the thick of the fight for freedom—following a trip home for a physical checkup. In December 1943, the Army inducted into service a portable, two-unit Cedar Rapids crushing plant donated by the manufacturer, the Iowa Manufacturing Co., and employees, in tribute to a former fellow worker who had lost his life in battle.

The machine was shipped over the 14,000-mi supply line to the China-Burma-India Theater, where it prepared aggregate for the Ledo Road, the old Burma Road and for all-weather roads and airstrips along the celebrated "Hump" in the CBI theater. Later it was reported playing a role in the re-taking of the Philippines. Then the war ended and reports ceased.

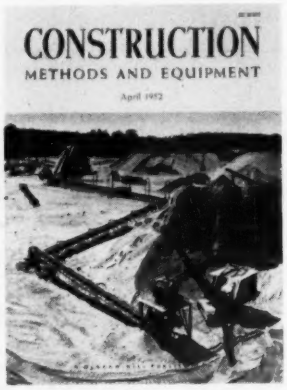
Late in 1950, workers of Iowa Manufacturing Co. were surprised pleasantly to find their special "baby" among a routine shipment of similar machines returned to the plant for overhaul and reconditioning. The dedication plaque still was attached to identify the 7-yr veteran, and many of those who helped to build it had a hand in the reconditioning. Their interest in this fabulous warrior was sharpened anew recently with the receipt of a letter and photograph from a Combat Engineers officer showing the crusher in operation for the Army on the banks of the Imjin River, close to the front in Korea.

MEXICAN OPERATORS of construction equipment now are learning operational techniques, proper care and maintenance of their machines in school. The first school for operators and mechanics was held under the joint sponsorship of International Road Federation and the Mexican Highway Association with funds provided by the Point IV Plan. Frank S. Gilmore, Kansas City, Mo., was in charge. Thirty-five students received six weeks of lectures, demonstrations and practical training with such success that the Mexican Highway Association has drawn plans to make the school permanent and to turn out 1,500 graduates a year.

CONCRETE FLOATING DRYDOCKS again are occupying the attention of Navy engineers in the Bureau of Yards and Docks. Recent developments have revived interest in both monolithic and sectional concrete auxiliary repair docks. Under study is the use of precast, prestressed and ordinary reinforced concretes. Construction would be done by building trades workers.

YOU CAN GET KILLED on construction jobs by letting down your mental guard even momentarily around electricity. In spite of many nation-wide campaigns on safety, mishaps take their toll. We sadly report the accidental electrocution of a power shovel operator. Joseph Emmanuelli, 28, lost his life—in spite of immediate professional efforts to revive him—when the shovel he was operating recently in an excavation at Pearl River, N. Y., came into contact with a high-tension wire. No details are available.

GYPSUM PRODUCERS are showing contractors new ideas on fireproofing construction for light steel structural frame. They point out that if light steel, fire-proofed with gypsum is used in preference to heavier steel, protected against fire with concrete, large amounts of money and tons of steel can be saved in the erection of structural frames for commercial apartment and institutional-type buildings. Cost comparisons are being worked out for: (1) Light steel frame with gypsum products; (2) heavier steel frame with concrete; and (3) reinforced concrete frame (pan construction).



On the Cover . . .

Much of the sized and washed aggregates going into concrete for streets, roads and defense plants in the Detroit metropolitan area comes from this modern efficient plant owned by Lyle J. Walker Sand & Gravel Co. at New Hudson, Mich. Lyle Walker designed the plant with the aid of R. J. Moeller Co., Detroit equipment distributors.

Raw material is dug and loaded into a receiving hopper by a Waukesha diesel-powered Bay City 1¼-yd Model 65 shovel equipped with a special 25-ft boom and 20-ft dipper sticks for working high gravel banks without danger of being buried by slides. From the hopper a series of 24-in. Barber-Greene belt conveyors, each flight powered by an independent electric motor, transports the material to a Telsmith 8-B primary breaker. Other processing equipment items are: Two Simplicity 4x8 triple-deck screens; one 4x10 Simplicity double-deck screen; one 36-in. Telsmith gyratory secondary crusher; two Telsmith twin-screw sand classifiers; and six 100-yd Heltzel circular bins.

Walker saves the top soil overburden stripped from his gravel pits for later respreading over the worked-out areas, converting them into valuable farmland.

Office and Warehouse La-Heet Stainless Steel Co., Los Angeles, Calif. — Archt. — Engr. — K. Bardizbanian, Gen'l. Contr. — Van Wagoner-Swan, Inc.; Pozzolith Ready-Mixed Concrete supplied by Consolidated Rock Products Co. — all of Los Angeles, Calif.

POZZOLITH READY-MIXED CONCRETE . . . Better, Faster, in Tilt-Up Construction . . .

reports general contractor

Pozzolith* Ready-Mixed Concrete is helping builders overcome the problems encountered in tilt-up construction.

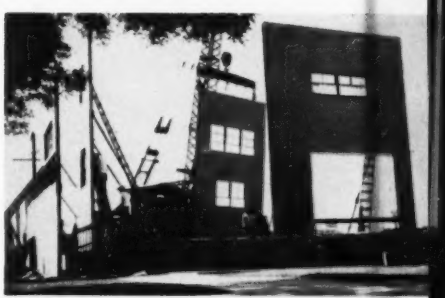
Well-known Los Angeles general contractor Van Wagoner-Swan, Inc., writes:

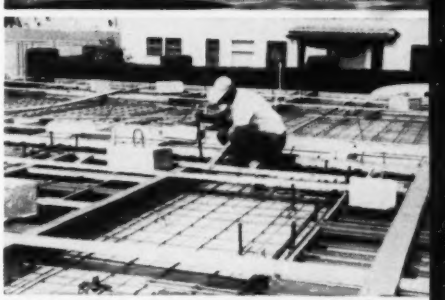
> "In the construction of our tilt-up concrete units, we have found that Pozzolith definitely decreases shrinkage and the cracking which results from this shrinkage.
>
> "Pozzolith also increases the strength of concrete, allowing us to shorten the time materially between casting and lifting. The decrease in water content with Pozzolith eliminates crazing of surface."

Whatever *your* concrete requirements, Pozzolith will enable you to obtain them *at lower cost than by any other means.*

Full information and Pozzolith booklet sent upon request.

* Pozzolith — the cement-dispersing, water-reducing agent which makes available the optimum amount of air in concrete. Developed by The Master Builders Co. in 1933. Contains calcium lignosulfonate as the basic ingredient. Added to concrete mix at mixer.





Over 600 Leading Ready-Mixed Plants Are Producing Pozzolith Ready-Mixed Concrete

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO

Kneads more road—needs less maintenance

with help of TIMKEN® bearings

UNIQUE in the field of road construction, these pneumatic tired rollers, built by Tampo Manufacturing Company of San Antonio, Texas, compact road materials by a kneading action. It is claimed that they can be pulled at speeds of 10 to 12 miles per hour—about three times the normal speed of a three-wheel or tandem roller.

And to help keep the rollers on the job and ready to go, Tampo designers have mounted the wheels of both the 9-wheel and 13-wheel rollers on Timken® tapered roller bearings. Timken bearings carry the heavy loads up to 10 tons including ballast when the rollers are working—and they permit higher rolling speeds when the rollers are transported from one job to another.

Due to line contact between rollers and races of Timken bearings, extra load-carrying capacity is provided. There's less chance of breakdown on the job.

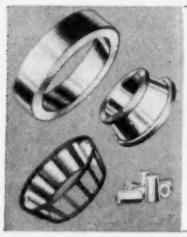
Because of their tapered construction, Timken bearings carry both radial and thrust loads in any combination. Wheels are held in proper alignment, wear is reduced.

Timken bearings keep housing and shaft concentric, so closures are more effective. Dirt, dust, and water are kept out — lubricant kept in. Lubrication time and maintenance are reduced.

For top bearing performance in whatever machinery you build or buy, be sure to specify Timken bearings. No other bearing can offer all the advantages of Timken bearings. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TAMPO MANUFACTURING COMPANY mounts wheels of their 9 and 13-wheel pneumatic tired rollers on Timken tapered roller bearings for minimum maintenance, long life.



DESIGN LEADERSHIP

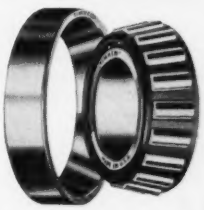
The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roller ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION ✳